Early

Silver-Marshall

Circuits

A Vintage Radio MONOGRAPH

by

D. H. MOORE

The Editorial Group, Ltd...

P.O. BOX 521 • PALO ALTO, CALIFORNIA

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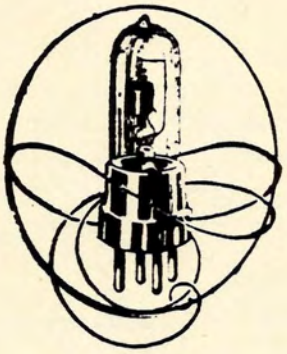
Beyond Rider!

DEDICATION

...to a way of life -
that should not have
been forgotten.



"The fun of Radio is in doing it yourself"

Autographed Edition

It is my sincerest wish that this latest contribution of my vintage radio writings may afford you as much enjoyment and usefulness as I've had in compiling it.

Over to you, and 73,

H. M. Lowe

Palo Alto

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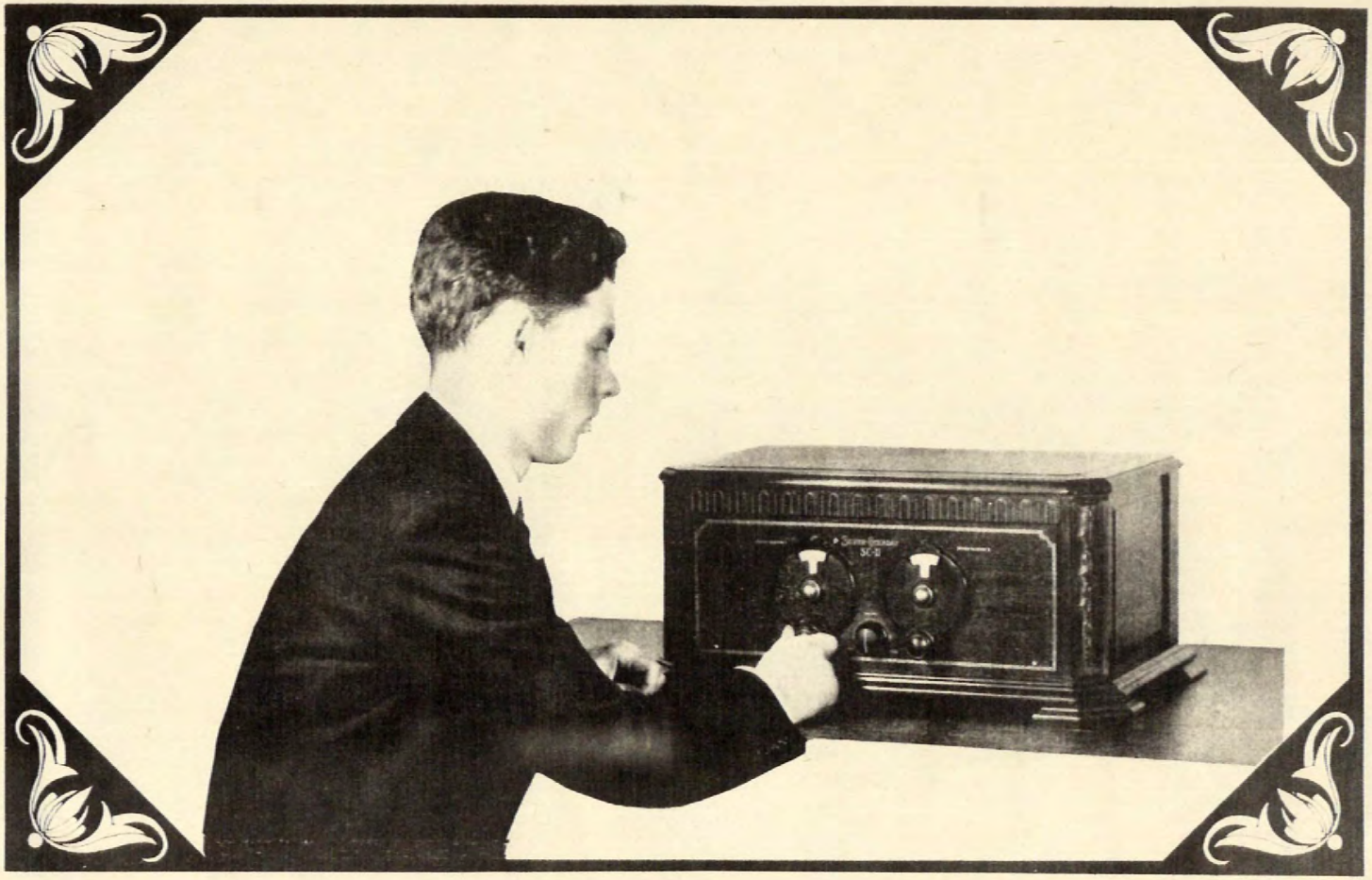

McMURDO SILVER testing the S-C II receiver he designed with another well-known radio buff of the period, LAURENCE M. COCKADAY. This was Silver's first serious collaboration, and the S-C II was an advance in the amorphous art of shielding, there in 1926. (Second version.)

SM

If E.H.Scott was considered by many to be the most eccentric of the early radio pioneers, there were just as many who deemed McMurdo Silver the most flamboyant.

Silver's story has been told, both in fact and fancy, for repetition here. He was considered a Simon Legree by most of his employees, a clever promotor by media editors, and tales of his tearing around Chicago in his flaming red roadster made the newspapers.

What is worthy of mention is the fact that the major contributions made by Silver, and there were a few, were all made while he was in his early Twenties. It may be remembered that a majority of our early radio pioneers were young men, with such exceptions as DeForest, Atwater Kent, Crosley, Moore.

Born in 1903 in Geneva, New York, the son of a professor of history at Hobart College, his youth was uneventful and unremarkable in any way. His chief characteristic seems to have been a precocious seriousness anent things that interested him - in the early day this was chiefly American firearms, a field in which he became an acknowledged authority. In the classic Horatio Alger tradition , he began his commercial life as a newsboy, a task he held to for years until he accumulated enough pennies to buy bits and pieces of wireless parts. He was a voracious reader of anything pertaining to wireless.

The death of his father in 1916 forced him and his mother to move to New York City. He managed to get into high-school, and was anathema to all of his teachers, to the point where he was sent down. Thus he never completed an high-school education, that was to get in his way almost immediately. Conventional occupations did not hold his interest, and he became a runner on Wall Street. At the age of 13, he had begun collecting data on firearms, and during the Kaiser's War he earned hundreds of dollars buying and selling firearms.

After the War, when the Government ban on amateurs allowed a rash of activities by being lifted, Silver began constructing or buying and selling primitive radio parts, while still trading in fire arms. In 1920 he went to work in the tube division of Westinghouse, a turning point in his multiple interests. On being told that he could not qualify as a radio engineer, Silver went to Cooper Union, a rather important trade-school at that time, and was promptly told that his qualifications precluded his being accepted.

He enrolled in another night-school that would prepare him for the entrance examinations at Cooper Union, which he finally passed, to eventually graduate at the head of his class.

In 1922 he went to work for A.J.Haynes, of Haynes-Griffin Radio Service, and witnessed the birth of the first kit-radio, the DX Haynes Tuner(detailed in Volume X of these Sketch-Books). The story goes that it was Silver who "sold" Haynes on the super-het, and what became known as the Haynes Super-Het emerged one year later(which may also be found detailed in these Sketch-Books). Meanwhile, Silver went every evening to the library, where he absorbed everything available on merchandising, selling, advertising, as applicable to Radio.

1926 brought an unexpected windfall in the form of a bequest from a step-grandfather - such family classifications were much in vogue at that time. The relative had been the U.S. Ambassador during the decade leading-up to the Kaiser's War. The bequest immediately sent Silver off to Chicago, as he felt Chicago was the coming capital for Radio. With his cousin J.R.Marshall, he set-up Silver-Marshall, Inc., producing and selling radio parts. A retail outlet was added, and a "plant" secured above a garage = 1,600 square feet.

Marshall retired from the business a couple of years later, but his name was retained. By 1928 Silver could claim with impunity that S-M was one of the wlrd's largest manufacturers of radios or radio kits and parts, a claim subsequently taken over by PILOT.

Like all self-educated men, Silver's career was like that of a sailor on horseback, erratic, sometimes brilliant, single minded in the narrowness of his interests, and rather crude in his social or commercial manners, behavioural norms, casual human intercourse. This may also be said in part of Scott, although Scott was quite educated, in the formal sense; he was also socially aware, and eccentric.

The famous fued between Silver and Scott, in which Scott accused Silver of having others manufacture and/or design his radios, as well as parts and accessories, has been a topic of conversation in many a bull-session around the country for decades. When the "Masterpiece" series by Silver did not survive the Depression, Silver worked for awhile for the Gutham Company, as vice-president at FADA, and eventually retired to a home in Connecticut, where he died in 1948.

All in all, McMurdo Silver seems to have lived a frenetic enough life during his 45 years, and his obsessive determination does merit admiration, along with the sometimes important contributions to the early art of Radio. This Monograph deals with the early circuitry attributed to Silver, and some may surprise you.

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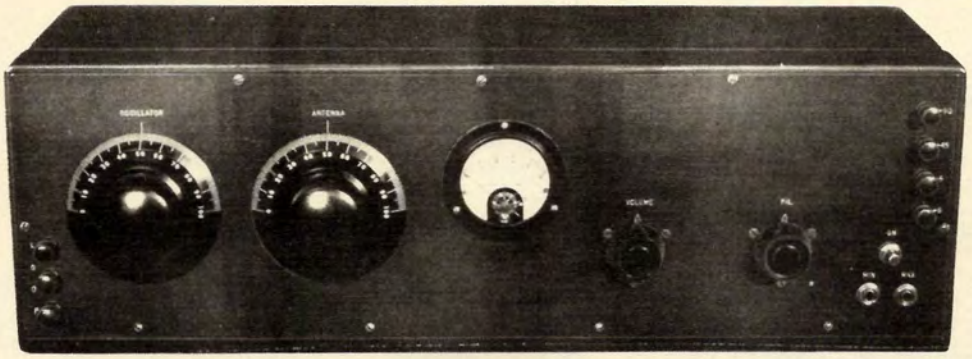
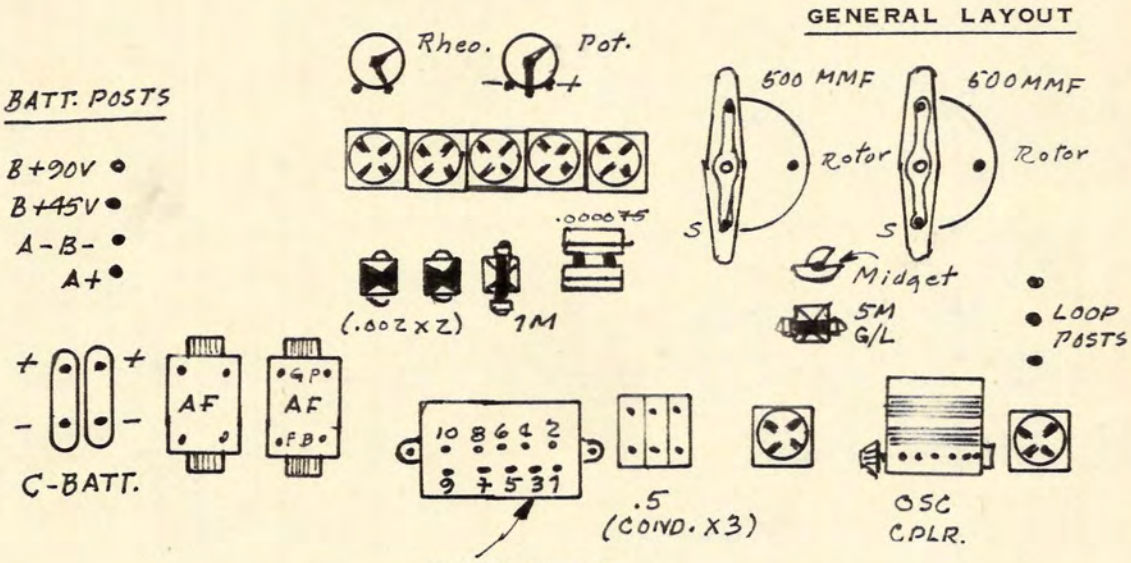
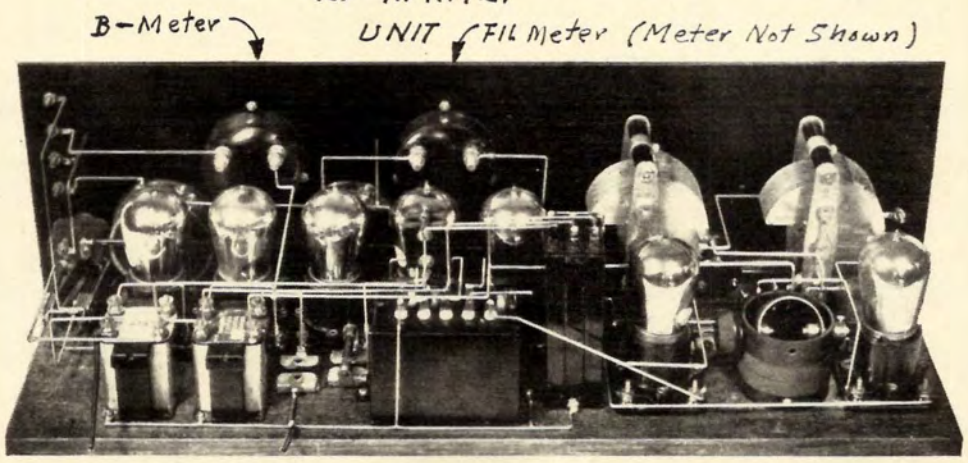
S-M LAB SUPER-HET, 1924: Sht. 1



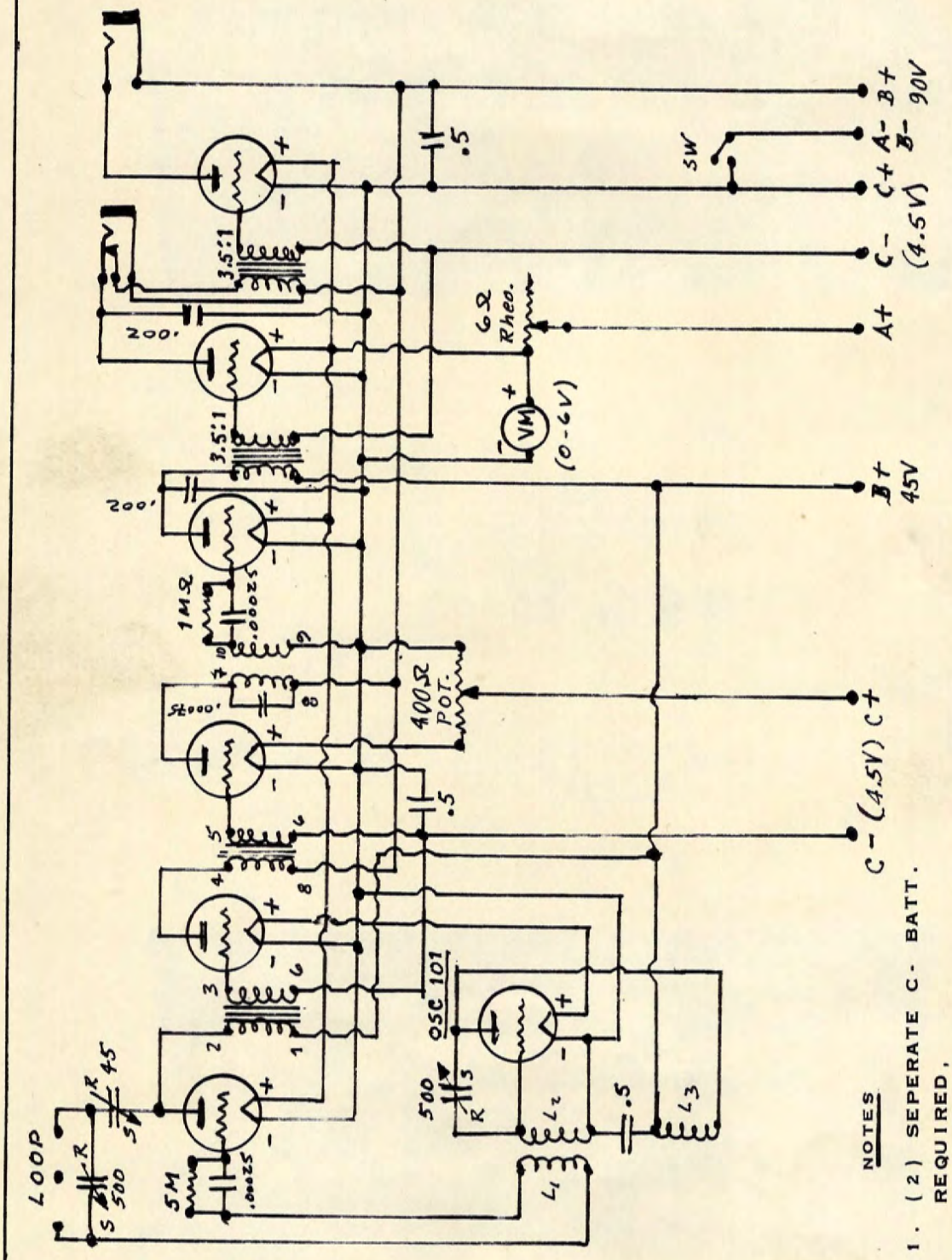
GENERAL LAYOUT





SAME MODEL WITH ADDED B- METER

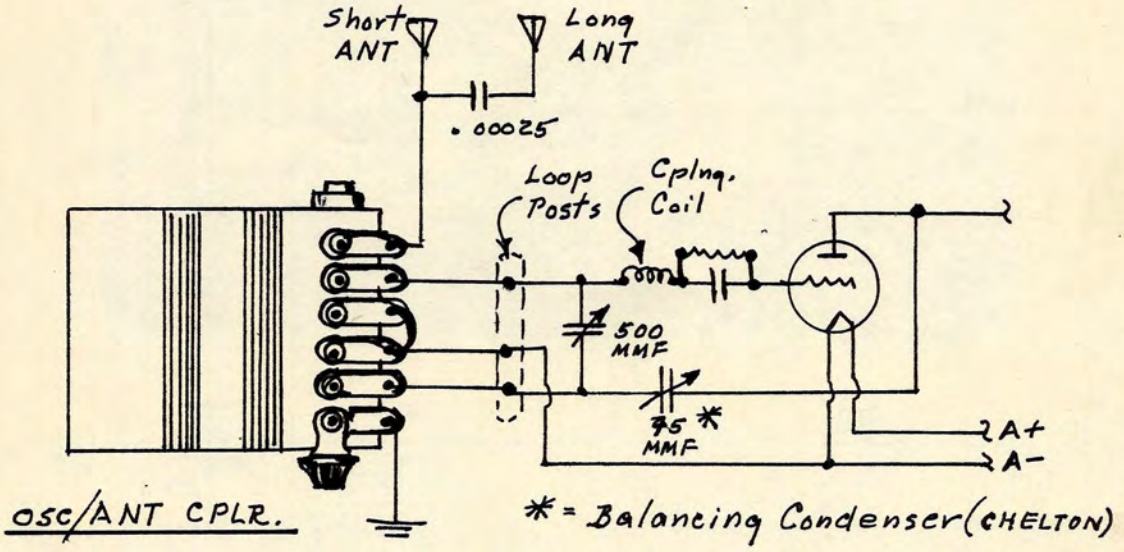
S-M LAB SUPER-HET, 1924: Sht. 2



NOTES

1. (2) SEPERATE C- BATT. REQUIRED.
2. C.T. OF LOOP TO A- STRING.
3. R - ROTOR. S - STATOR.
4. WD-11, WD-12, 01A, DV-3, V-99 TUBES MAY BE USED.

S-M LAB SUPER-HET, 1924: Sht. 3



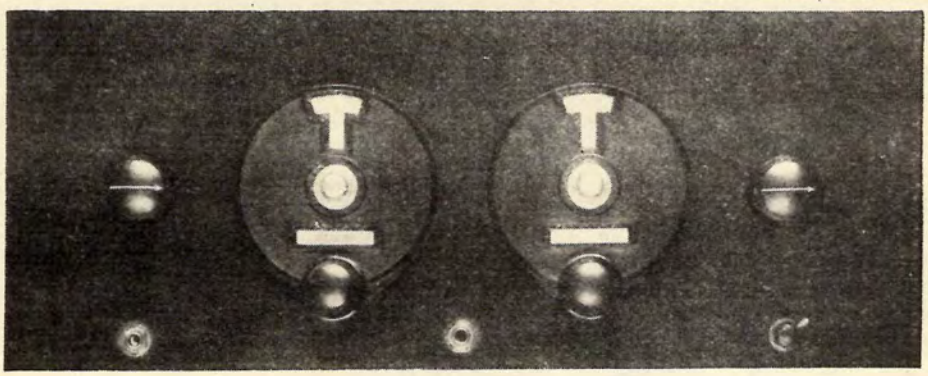
OSC. CPLR. USED AS AN ANT. CPLR.

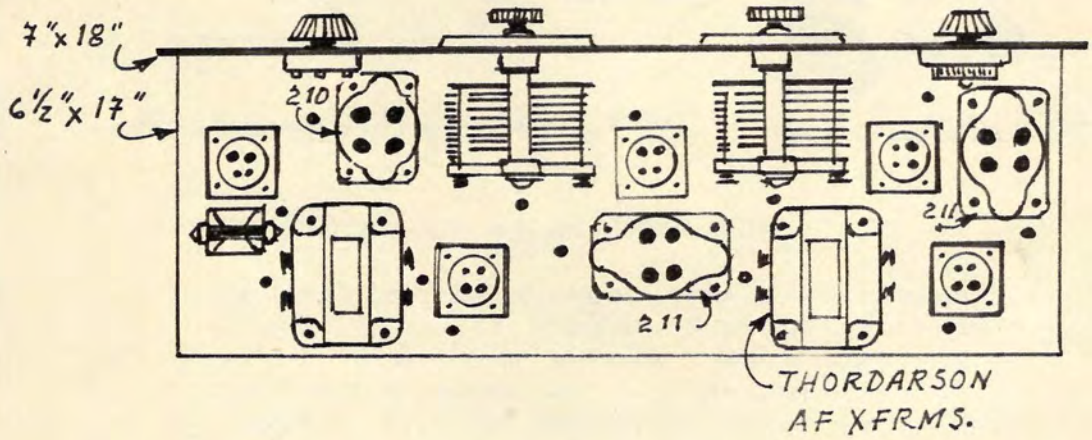
A CONVENTIONAL ANT. COUPLER MAY BE MADE BY WINDING 50 TURNS OF NUMBER 24 D.S.C. WIRE ON A 3-INCH TUBE, TAPT AT THE CENTRE AS THE SECONDARY. THE PRIMARY IS WOUND ON THE SAME TUBE OF 10 TURNS OF NUMBER 24 D.S.C. WIRE, CONNECTED BETWEEN ANT. & GND.

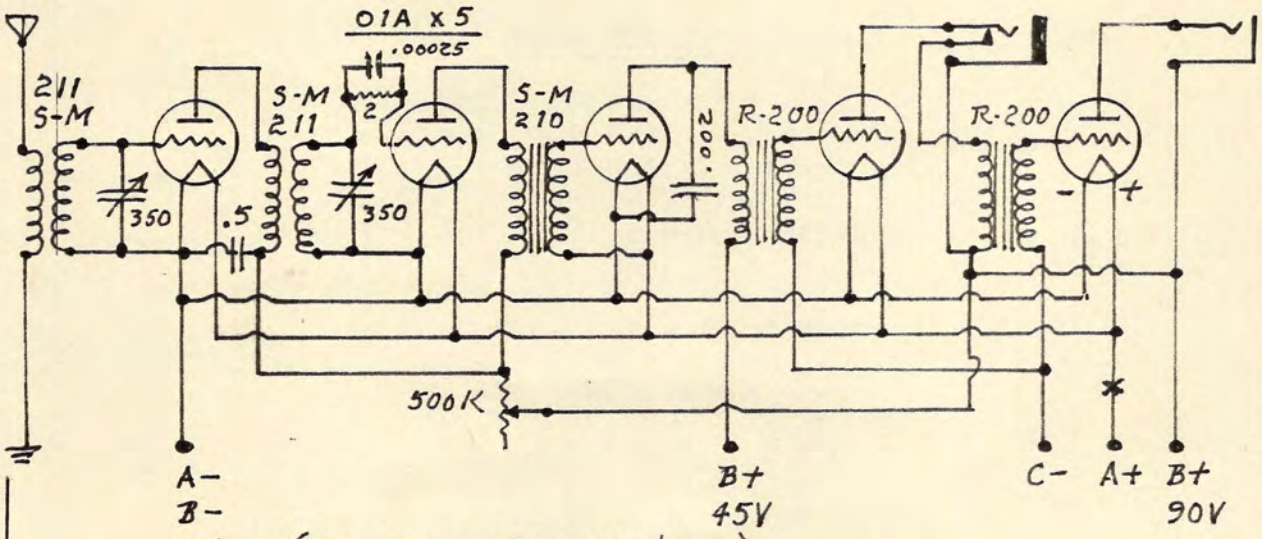
GENERAL PARTS LIST

1. Panel = 7" x 24" Bakelite.
2. Baseboard = 7" x 23", oak.
3. Grid-Leaks = 1MΩ & 5MΩ.
4. Thordarson AF Xfrmrs. 3.5:1 (2).
5. Apex 4" Ø Dials (2).
6. 500 mmf Variables, S-M 301(2).
7. 7Ω Rheostat; 400Ω Pot.
8. Benjamin Spring-Sockets (7).
9. Mica Cond. .00025(2); .002(2); .0075; 45mmf.
10. By-Pass Cond. .5MFD (2).
11. Oscillator Coupler S-M 101.
12. RF Xfrmrs. S-M 401.
13. 3-Point Loop.
14. C-Batteries (2), 4.5V.
15. Dual Range Voltmener, Jewell or Weston.

SILVER LONG WAVE RECEIVER, 1926



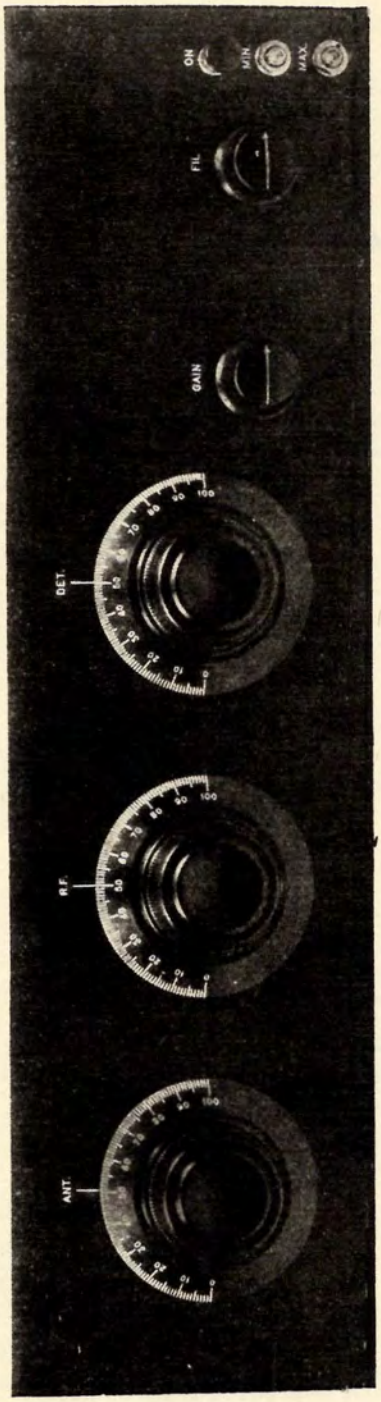


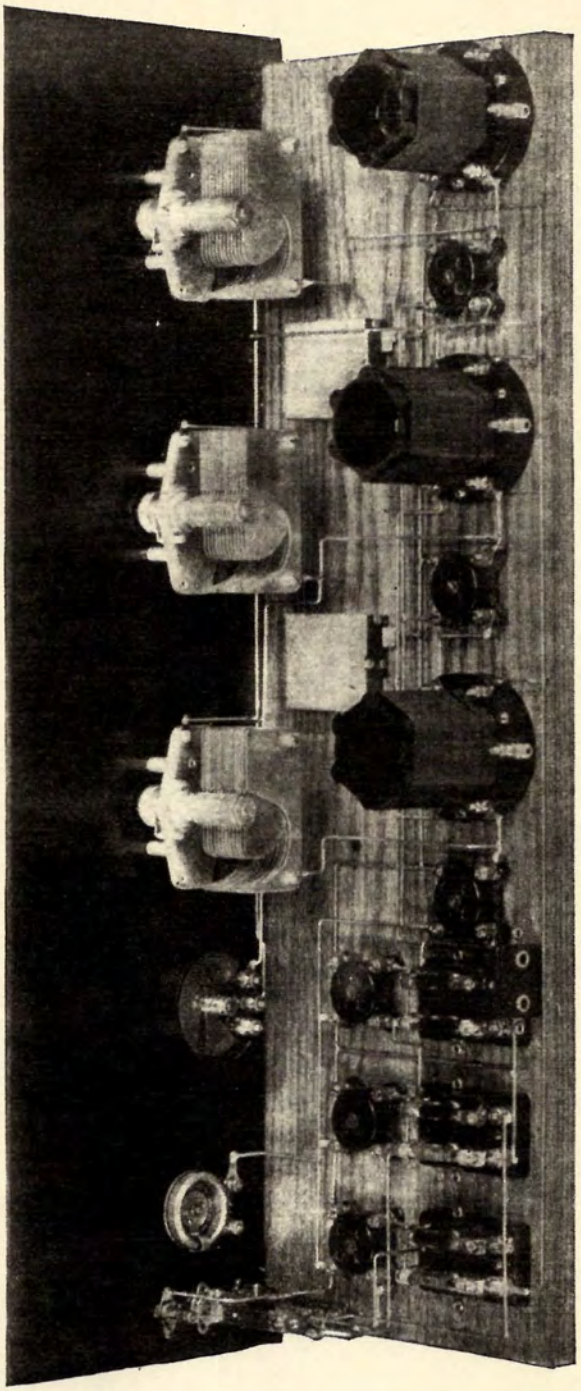


(4500 TO 15000 Meters.)

(CB 6-26)

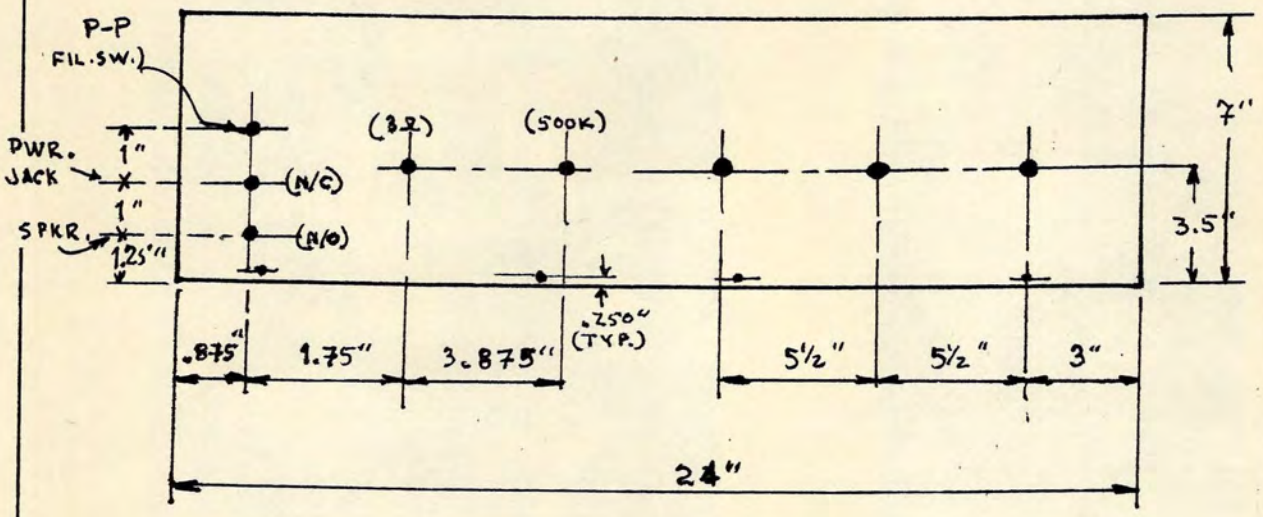
"SILVER SIX", 1926;Sht.1





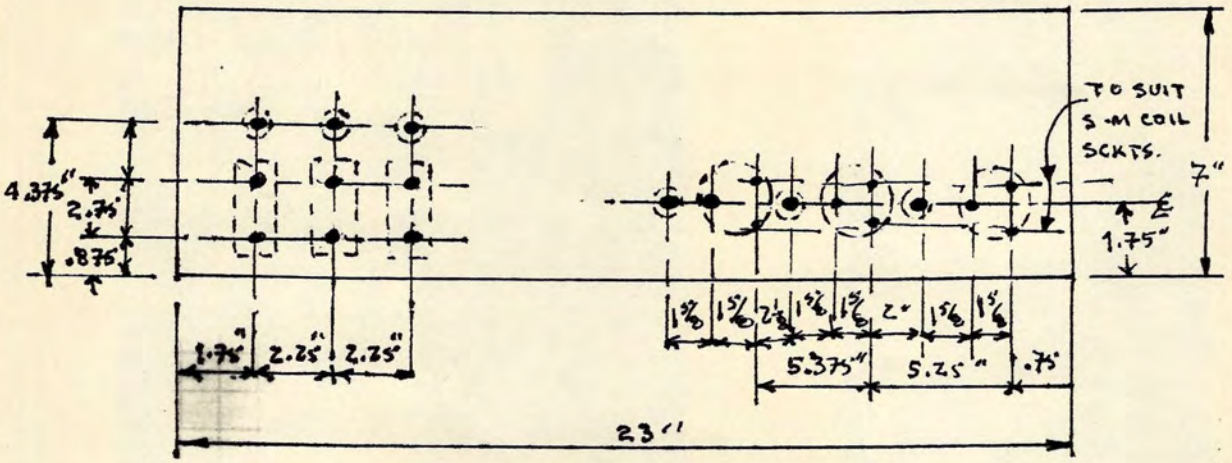
(RN 8-26/ RLG 3-24)

SILVER SIX T.R.F.; 1926
50 to 600 Meters (Sht 2)



BACK OF PANEL

N/C = Normally Closed
N/O = Normally Open



BASEBOARD

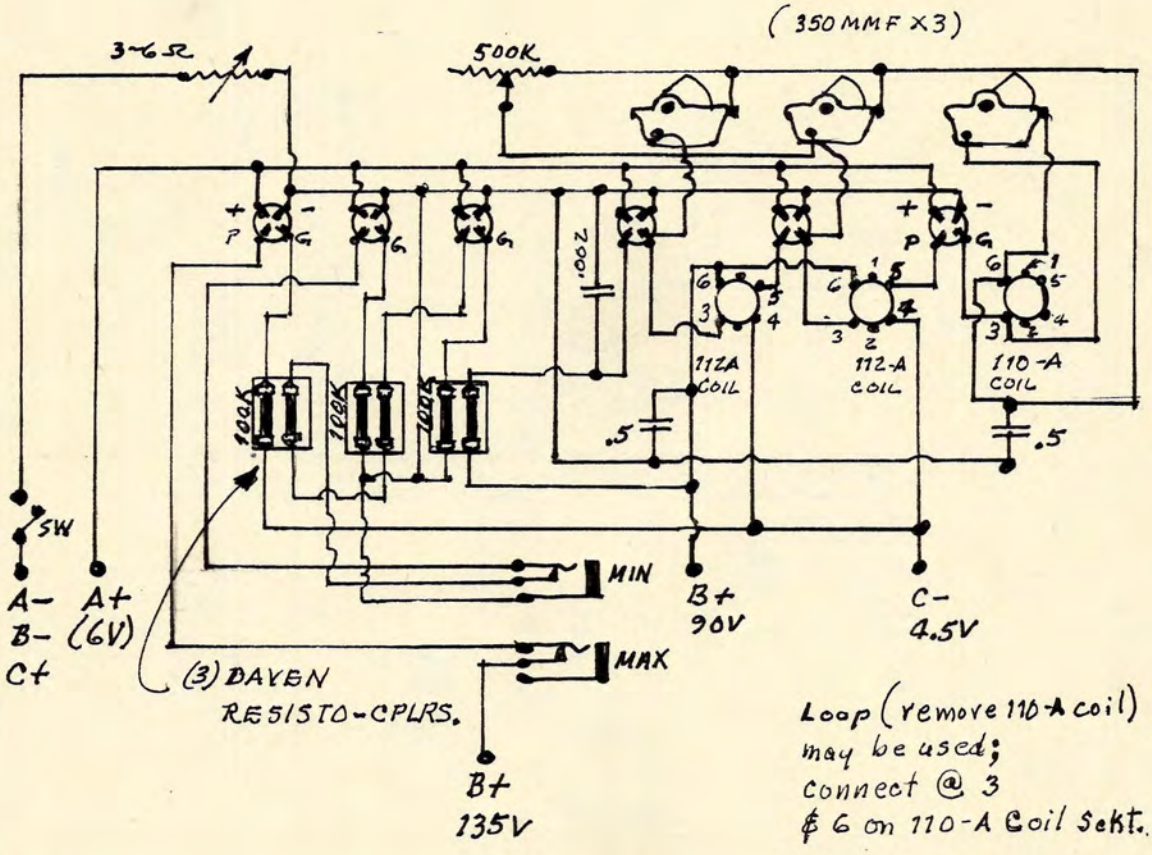
Anyone Can Build the "Six"

Type 600 KIT Includes all parts necessary $53.00
Type 610 KIT Essentials only, including 3 condensers, 3 inductances and 3 inductance sockets.....$27.75

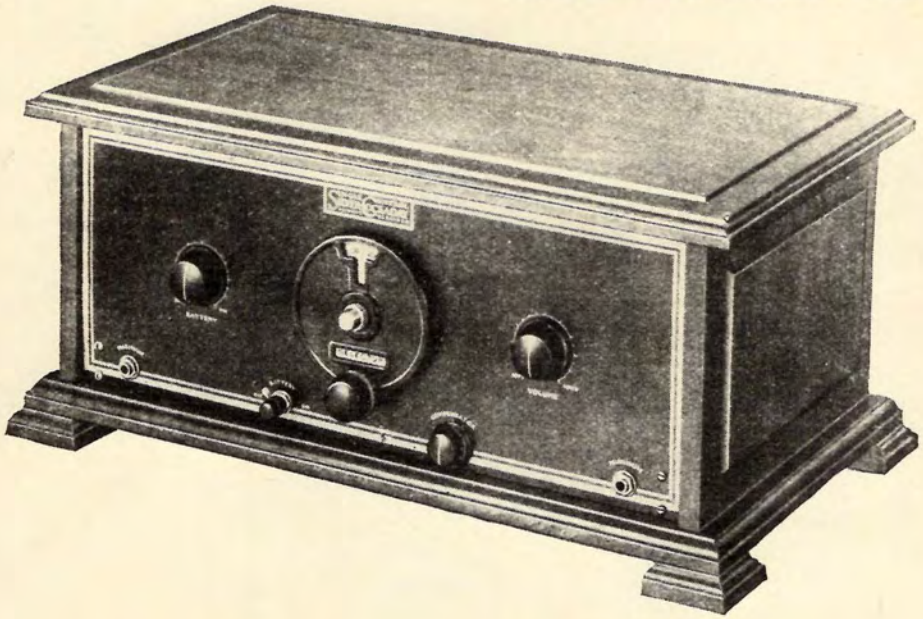
"SILVER SIX", 1926
(Sht. 3)

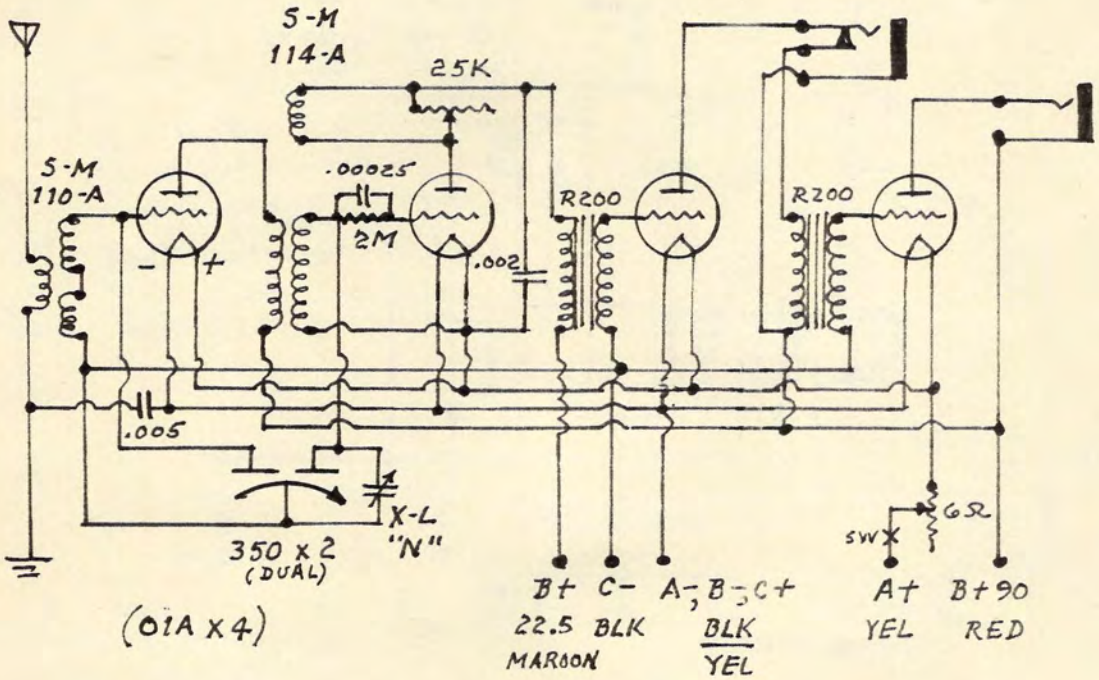
GENERAL NOTES:

1. Tubes = (5) 01A; 12. (Musselman 5VA & 5VC may be used, if you have them; or (5) 99's and a 120 with dry-cells. The Musselman 3VA tubes were the same as the 99.
2. Use square buss-bar for wiring.
3. S-M coils: (2) 112-A; 110-A (ANT).
4. S-M 510 tube sockets.
5. S-M 515 coil sockets.
6. BC bands only covered by the coils listed above. For 90-210 meters reception, substitute one 110-B and two 112-B coils. For 50-110 meters, use one 110-C and two 112-C coils - all made by S-M.
7. Daven resistance-couplers were used: (3) 100K; 250K; 500K; 1Megohm.



SILVER-COCKADAY TRF, 1926; Sht. 1

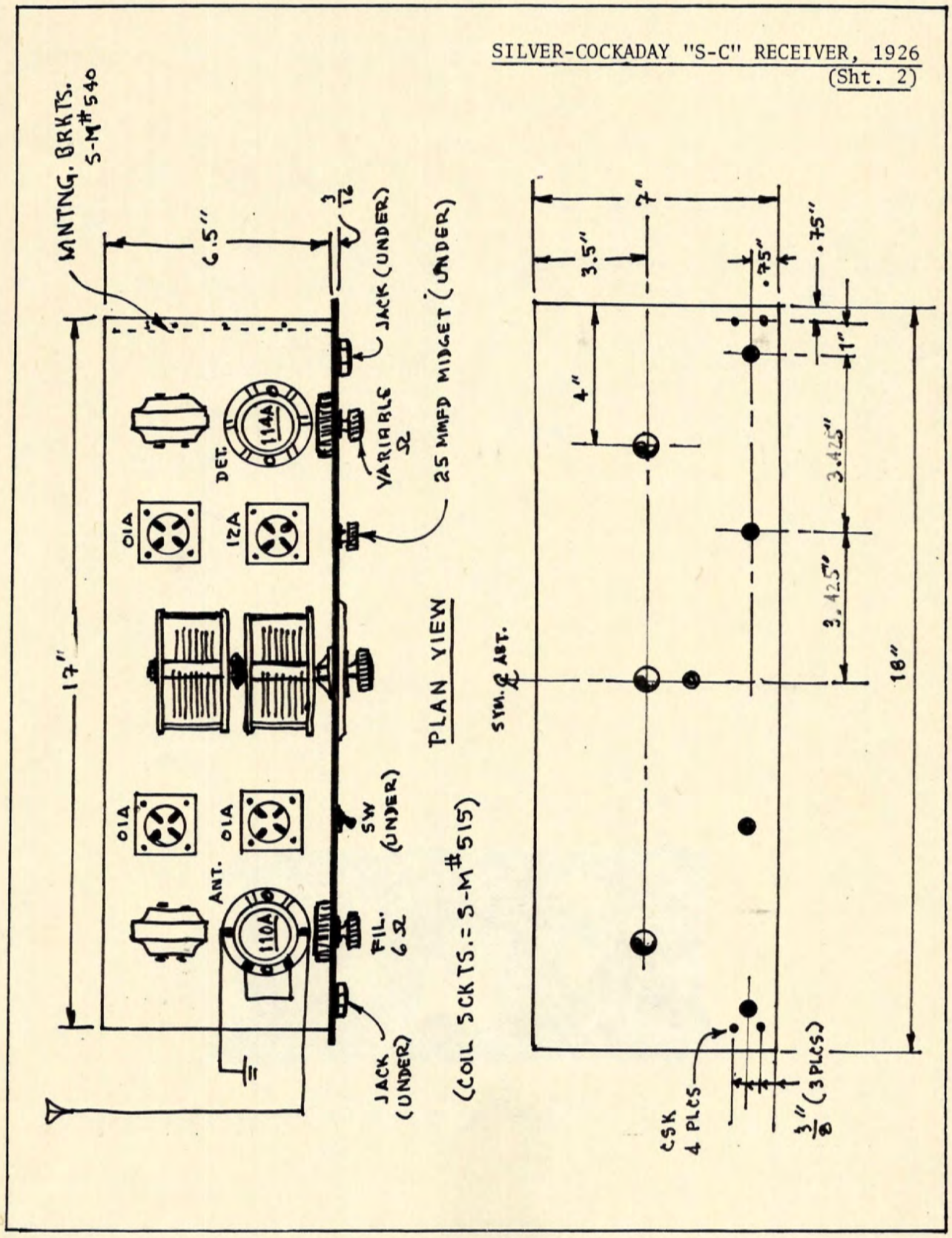




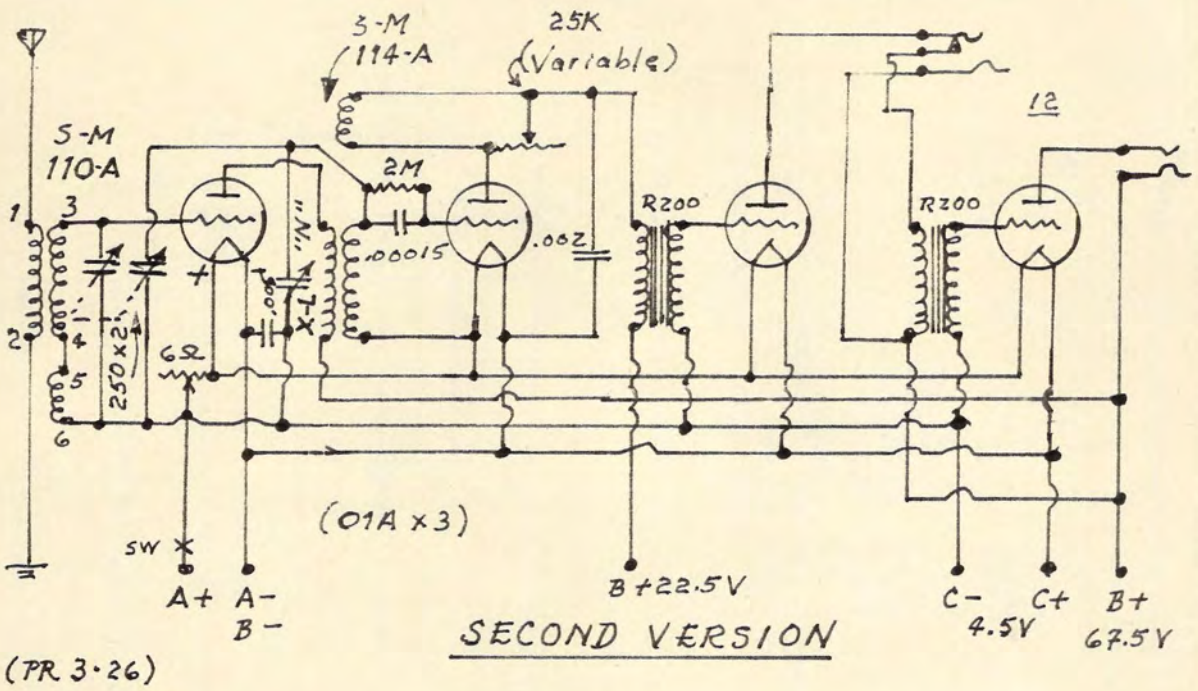
(CBG-26)

FIRST VERSION

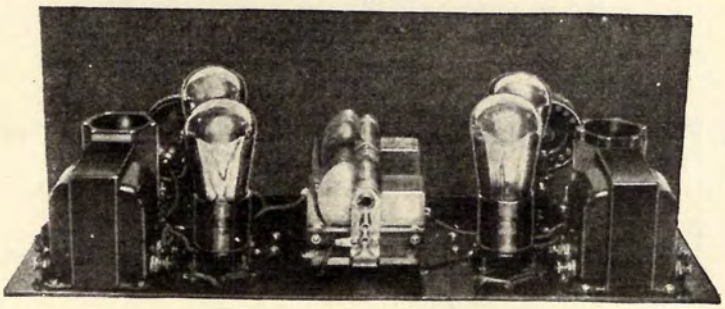
SILVER-COCKADAY "S-C" RECEIVER, 1926
(Sht. 2)



SILVER-COCKADAY TRF, 1926; Sht. 3



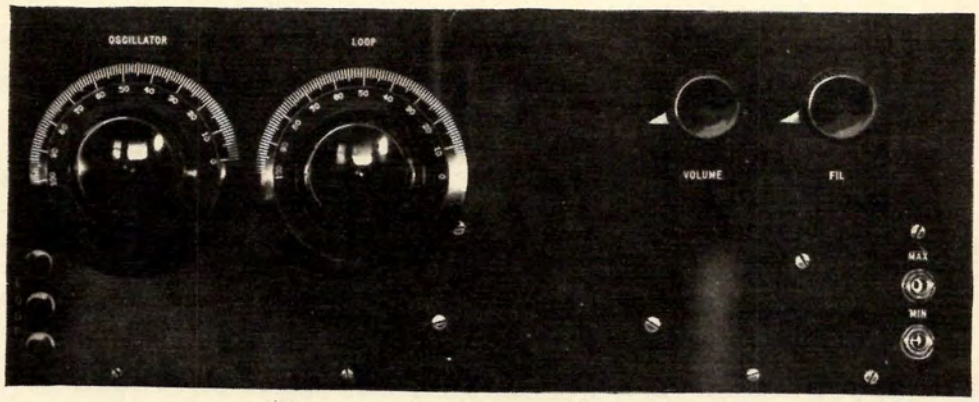
The two versions of the S-C receiver are essentially the same, the chief differences occurring in the value of the variable condensers, and the over-all size of the panel and chassis - e.g., the first panel was 7" x 18"; the second panel was 6½" x 18". The midget variable originally 25 MMF may be replaced with an X-L Type "N" Variodenser, if more convenient.



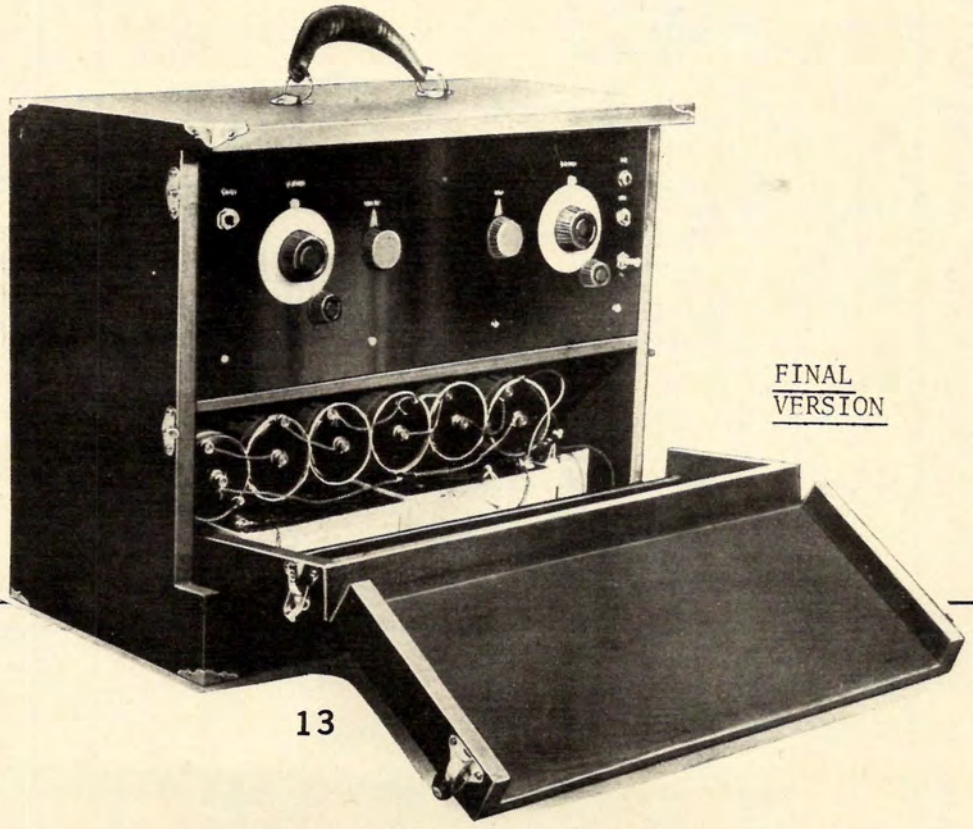
REAR VIEW - BOTH VERSIONS

The PORTABLE SUPER-HETERODYNE

By McMURDO SILVER

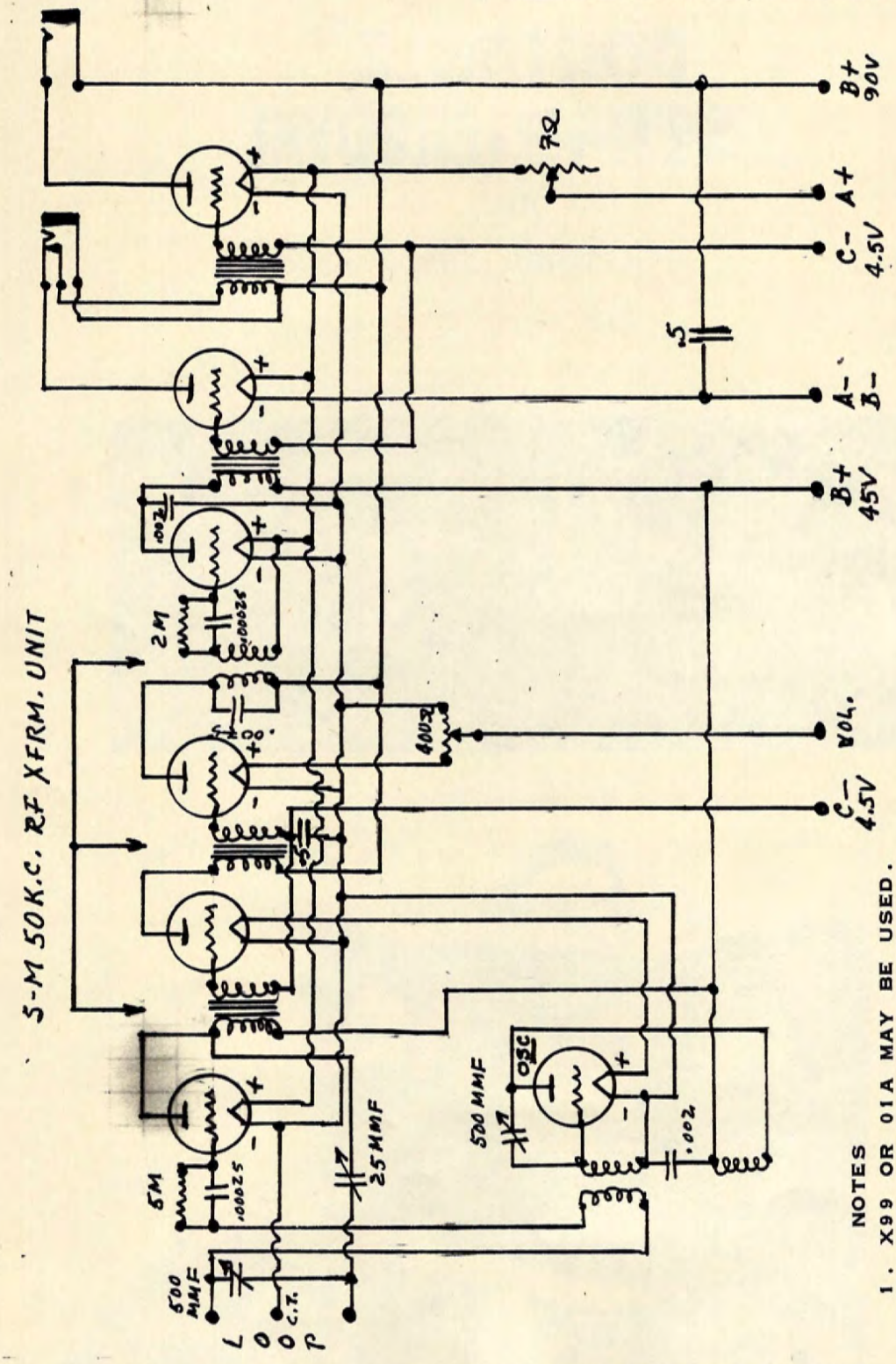


FIRST VERSION PANEL



FINAL VERSION

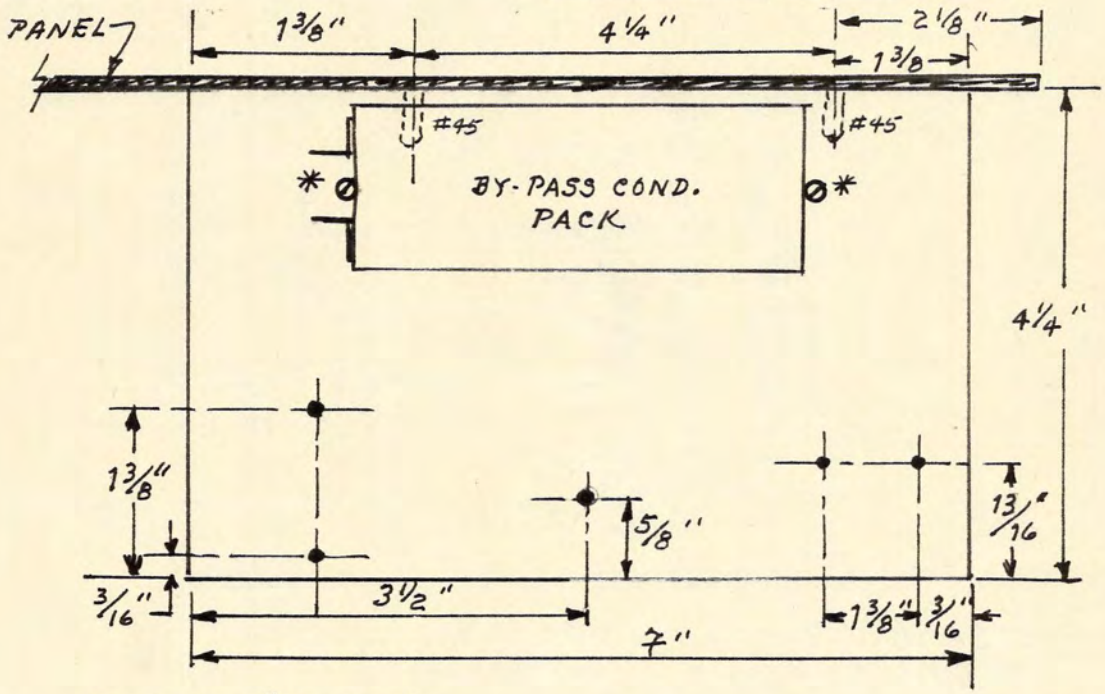
S-M SUPER-HET PORTABLE, Sht. 2



NOTES

1. X99 OR 01A MAY BE USED.
2. RF UNIT TERMINAL NUMBERS SAME AS FOR S-M LAB SUPER-HET.
3. HARDWARE INTERCHANGEABLE WITH S-M LAB SUPER-HET DIRECTLY.

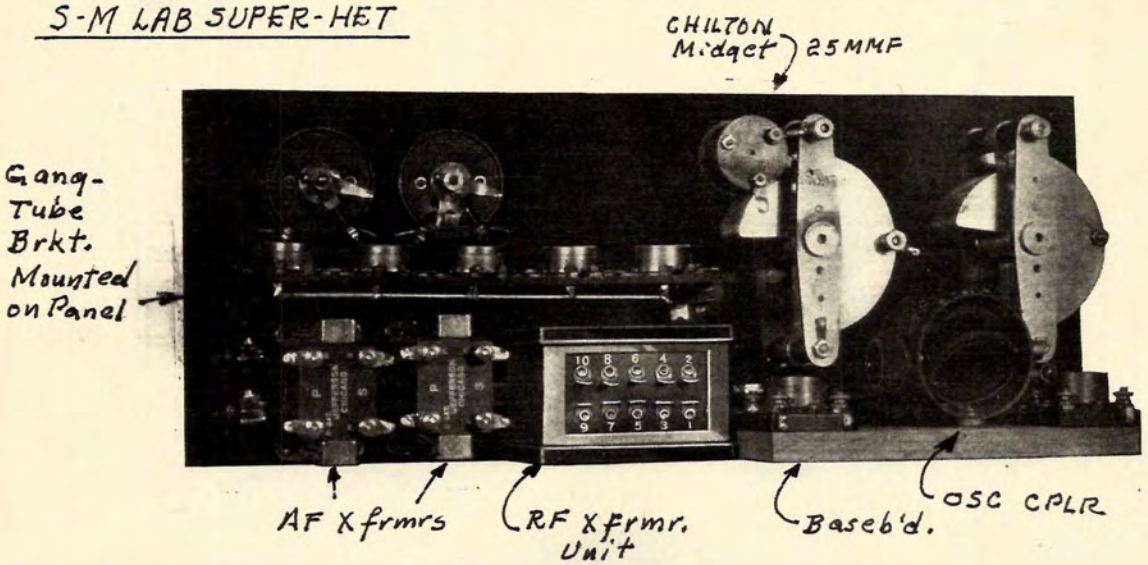
S-M SUPER-HET PORTABLE; Sht. 3



All holes #45 drill.
* = Screws in baseboard soldered to can.

BASEBOARD FOR BY-PASS COND., OSC COUPLER, FIRST 2 TUBES SCKTS. - PLAN VIEW.

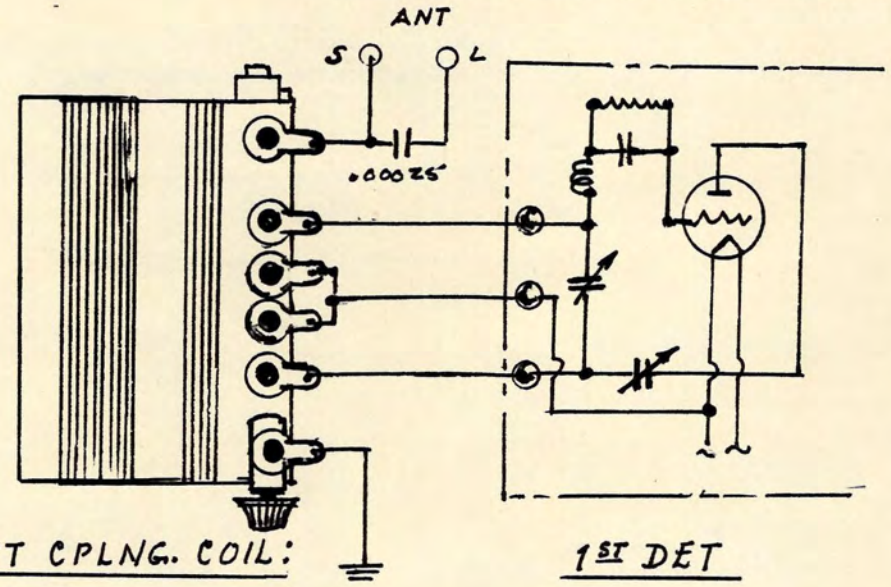
S-M LAB SUPER-HET



(SEE PAGE 3)

REAR VIEW, FIRST VERSION

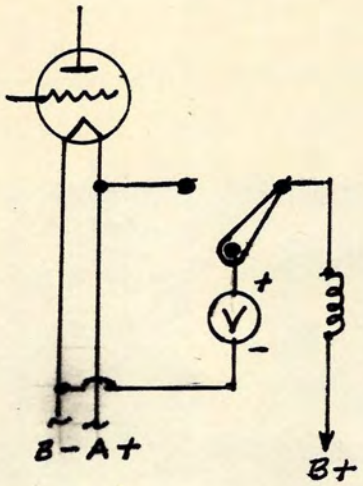
S-M SUPER-HET PORTABLE, 1925: Sht. 4



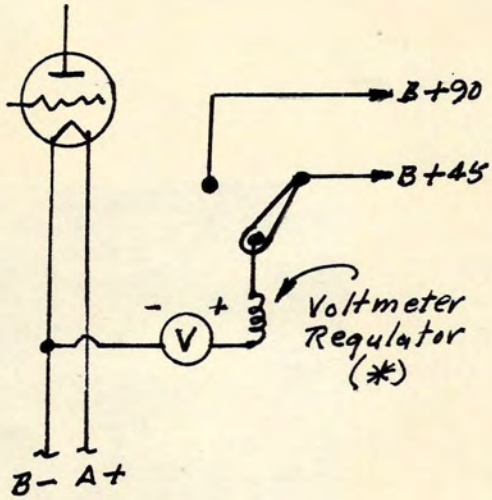
ANT CPLNG. COIL:

1ST DET

SEC = 50T #24 DCC, 3"ϕ Form.
PRI = 10T Wound On Same Form.



2-RANGE VM.
(FIL & PL Voltage)



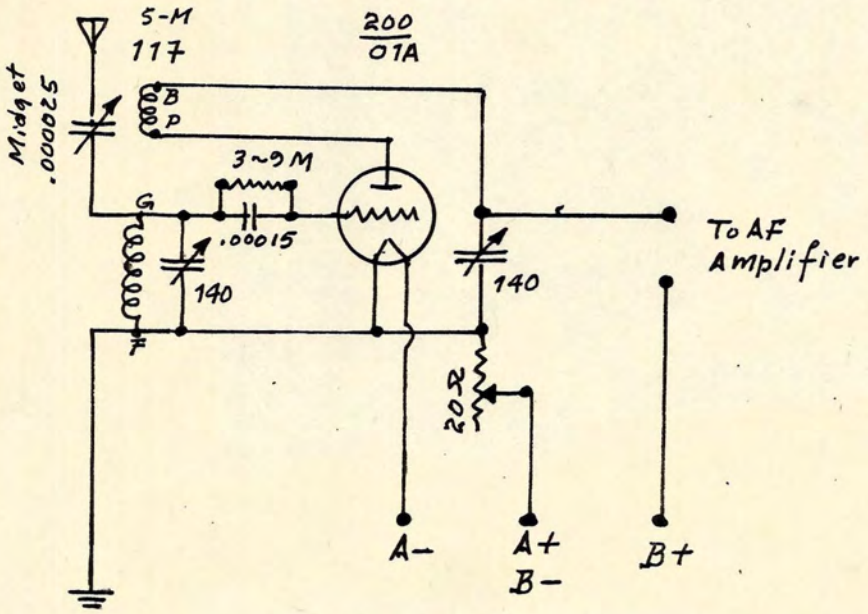
1 RANGE VM.
(DET PL Voltage)

(6-13-25 RW)

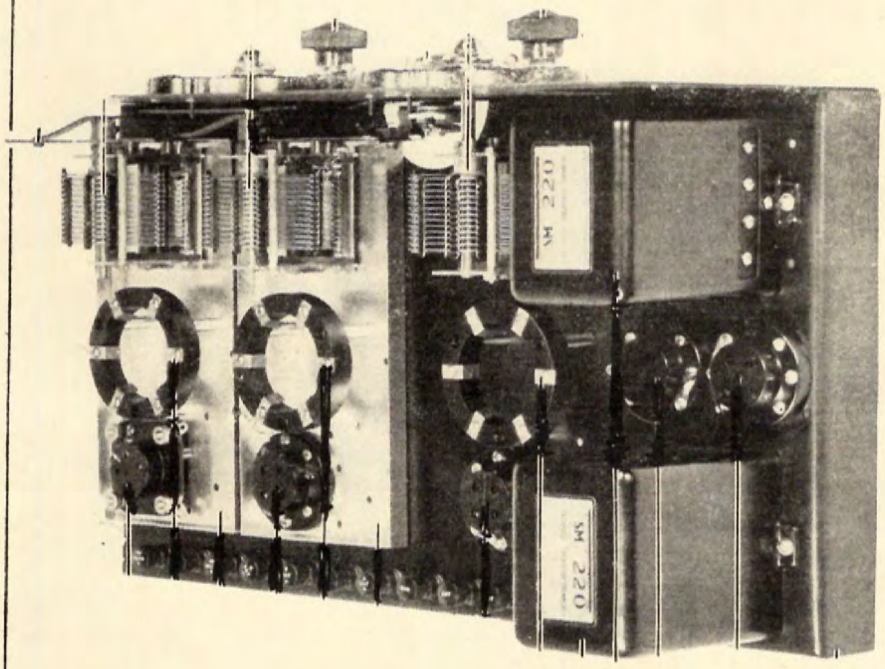
(*) = 500T, #36 Enamel, 3"ϕ Form.

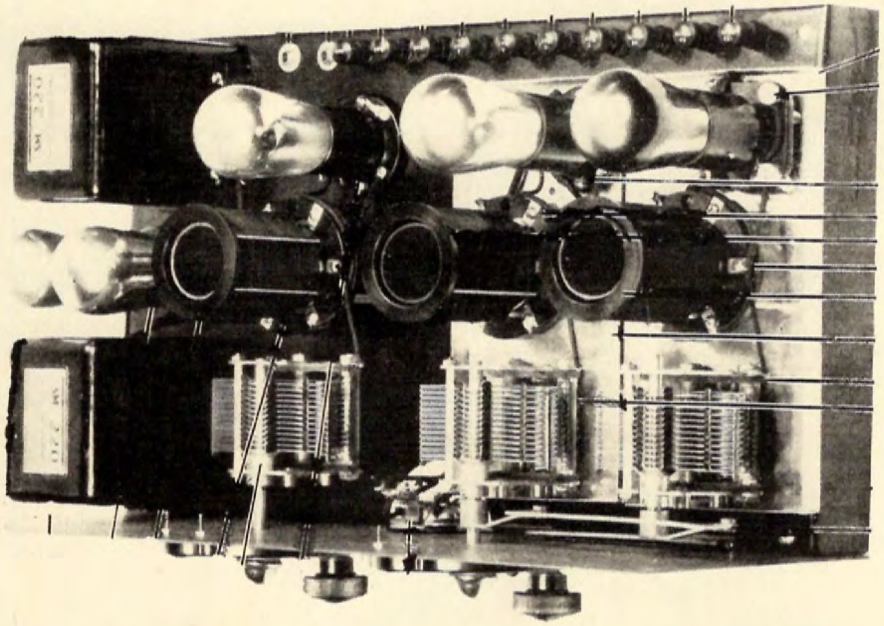
S-M TYPE 635 SHORT-WAVE KIT

Range = 18 to 150 Meters.
Armstrong Patent.
Original Cost = $23.
117 Series Coils Used.



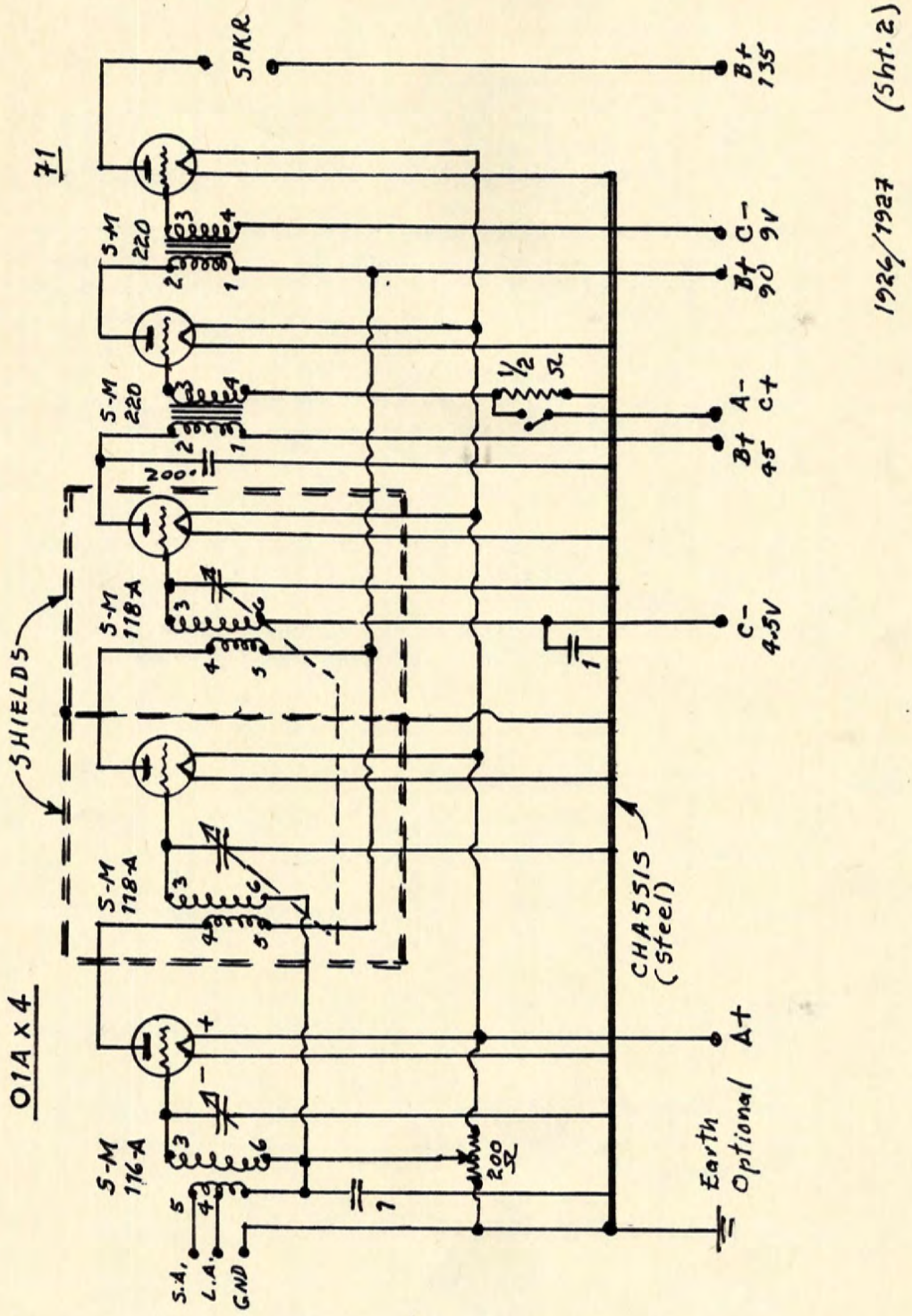
SILVER-COCKADAY S-C II RECEIVER





The layouts shown are straight-forward and conventional; the designation leaders may be ignored, as what they referenced is obvious. The only one item that may need clarification is the so-called Link Motion, which is detailed over-leaf.

SILVER-COCKADAY S-C II RECEIVER



SILVER-COCKADAY S-C II RECEIVER

LINK-MOTION INSTALLATION:

1. Have the chassis facing you.
2. Rotate the centre and RH variables until fully meshed.
3. Pick up Link Motion with the two parallel bars above the lock-collars, and with the lock-collars facing the rear of the chassis.
4. Be certain lock-collars have their set-screws installed.
5. Slip lock-collars over the shafts of the two variables to within one-eighth of an inch of the lock-collars on variable shafts. This clearance is for fitting the shields later on.
6. Return rotors of variable fully CCW.
7. Turn Link Motion fully CCW, with one arm link points straight to the left, and one arm straight upward.
8. Tighten set screws on Lonk Motion lock-collars.
9. Link Motion is now ready for action.

The above instructions apply only if you have the original S-M Link Motion assembly. As stated elsewhere, employing a later model dual-gang variable will prove to be much more convenient, and less exasperating, as the Link Motion did slip after awhile, and the metal used was inferior.

* * *

TROUBLE-SHOOTING; BOTH VERSIONS:

For lack of signal, lack of volume, poor tone quality, lack of sensitivity, the following checks apply:

Check all connexions; batteries, tubes, speaker, ANT/GND system, improper coil placement.

Noisy Reception: Remove ANT & GND: if noise persists, check as above. Set should be silent without ANT/GND connected.

Motor-Boating (Blocking): Defective C-battery: improper, or unseated tube, Check also grid circuits of DET and audio sexions. A B-eliminator with poor voltage regulation can also cause motor-boating.

Humming: Speaker too close to set; set not in a cabinet.

Other Ranges: Use of S-M 115D & E, 116D & E coils will extend the reception range of the receiver from 550 meters to 3000 meters.

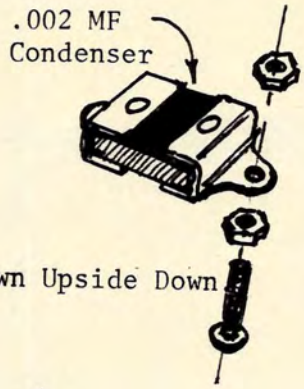
SILVER-COCKADAY S-C II RECEIVER

GENERAL NOTES:

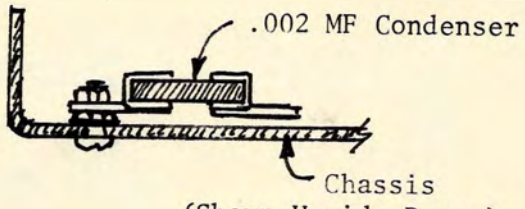
1. Wavelength Range = 200 - 550 Meters.
2. Audio Frequency Range = 50 - 5,000 Cycles.
3. Silver-Marshall Units Specified:
   - 316A Variable
   - 316B Variables (2)
   - 637 Link Motion (*)
   - 515 Coil Sockets (3)
   - 220 AF Tranformers (2)
   - 116A Coil
   - 118A Coil (2)
   - 631 Stage Shields (2)

   S-M parts alone cost $44 in 1927.

   (*) = The "Link Motion" designation applied to a mechanical pantograph connecting the two 316B variables. It was rather crude. Unless you are a purist, any later model dual-gang variable will prove more convenient.
4. Insulating washers, of which there were 30, were absolutely necessary. The items to be insulated were the binding posts E1 through E10 on the illustrations, the four sockets M1 through M4, tip jacks designated C1 and C2, the Link Motion K, and the shields Q1 and Q2. The last items would be the one-half-ohm resistor (½) and the potentiometer.
5. The coil socket must be raised .75" above the chassis!
6. The .002 MF condenser is held away from the chassis by a nut, as shown below:

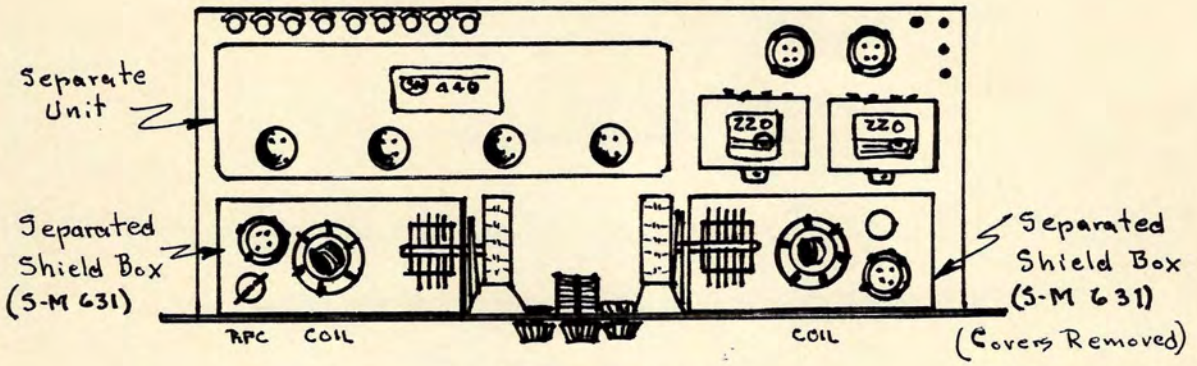


(Shown Upside Down.)

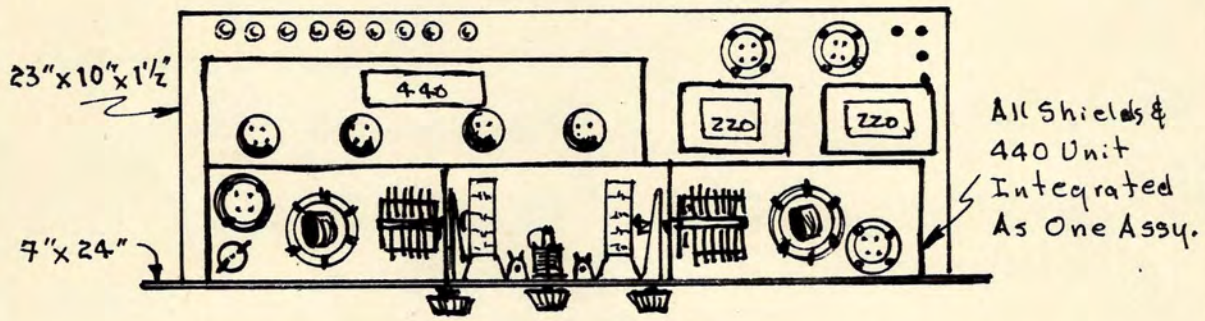


(Shown Upside Down.)

SILVER-MARSHALL LAB SUPER-HET, 1927
(Sht. 1)

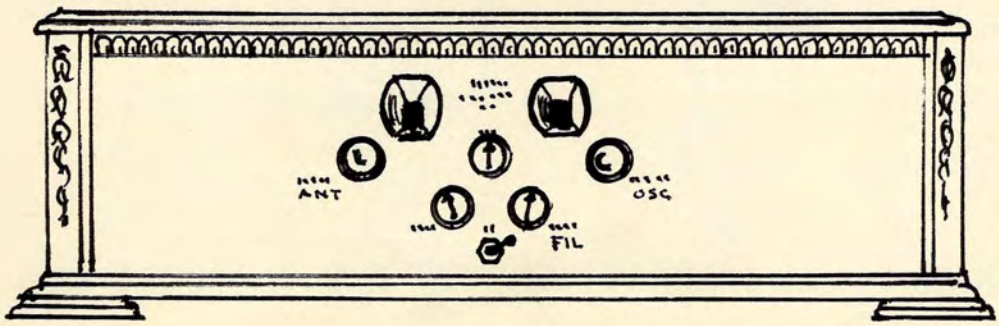


1927 LAYOUT



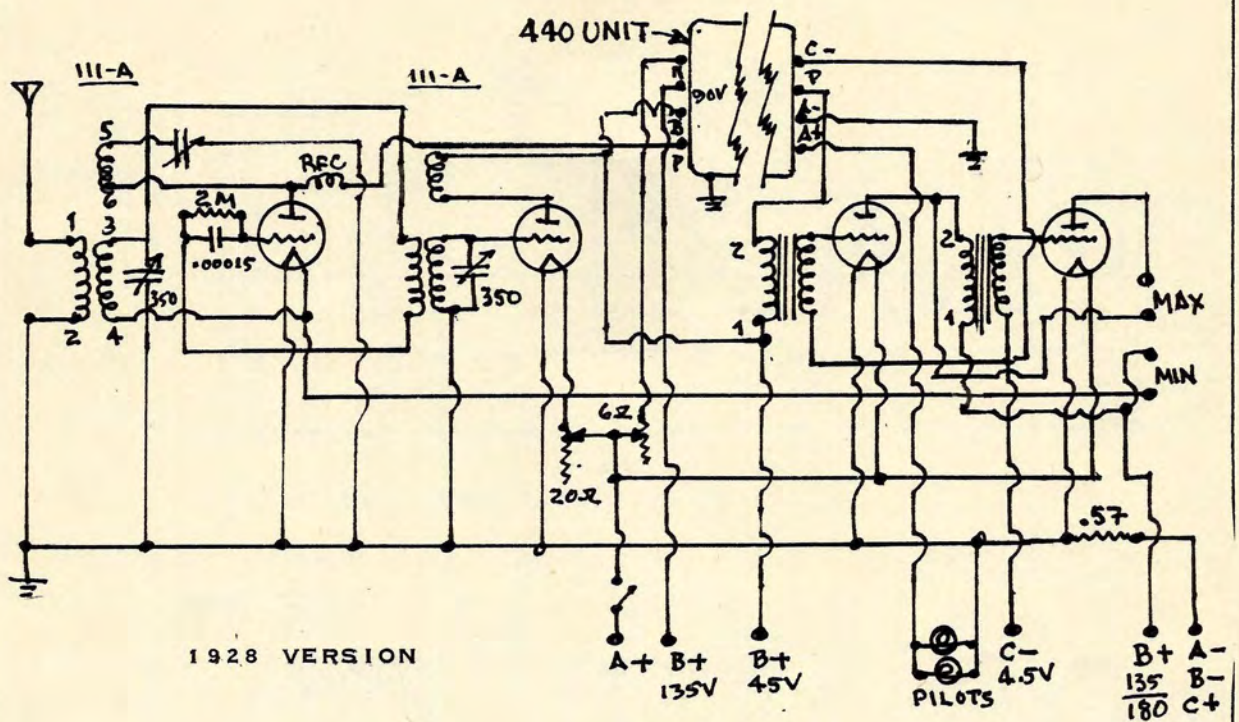
1928 LAYOUT

(30-3,000 Meters)

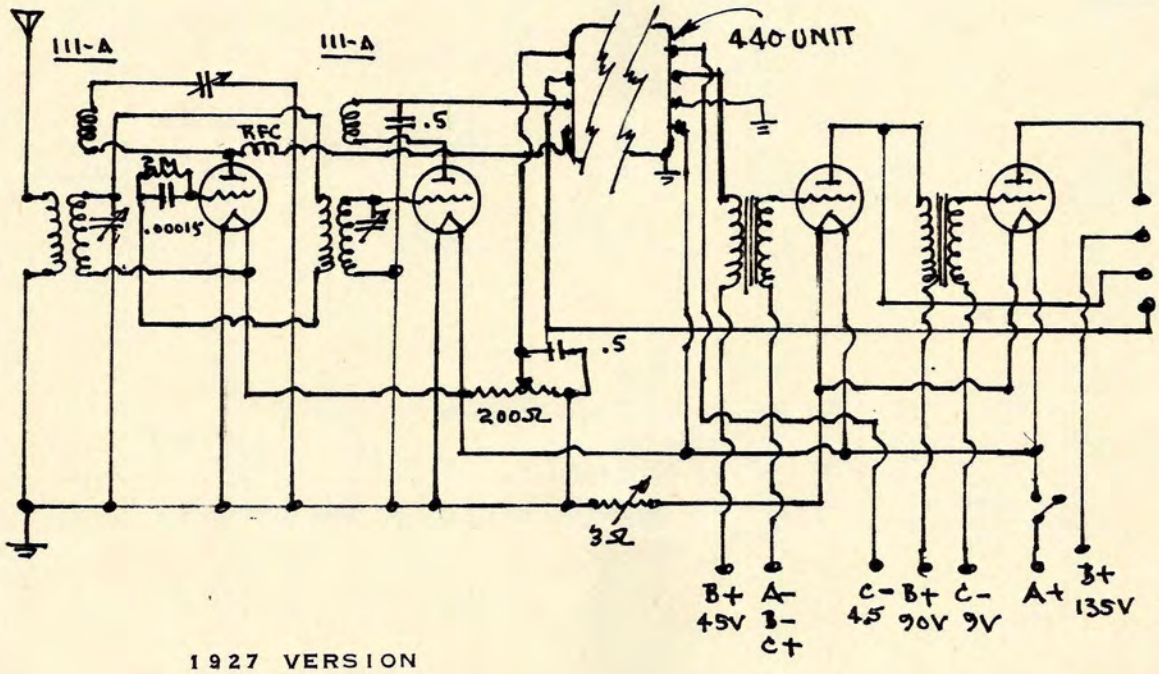


1927 FRONT PANEL

SILVER-MARSHALL LAB SUPER-HET, 1925
(Sht. 2)

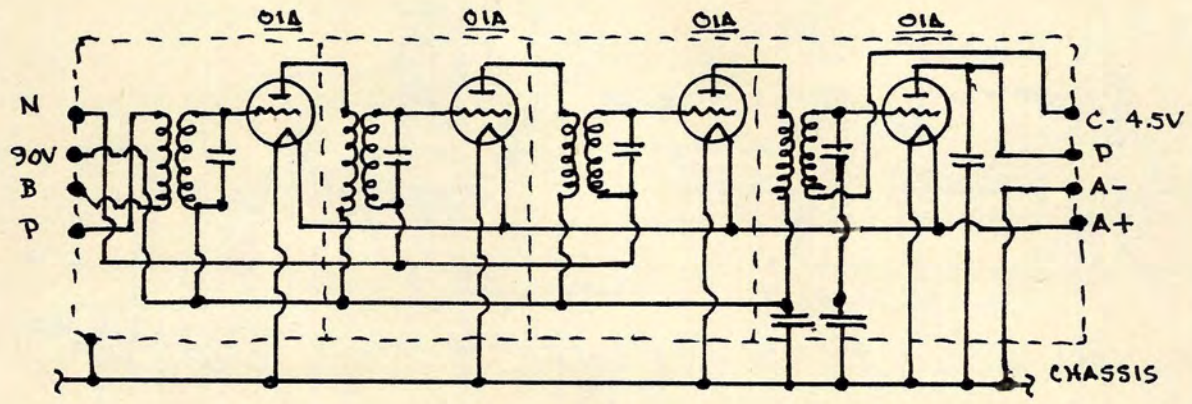


1928 VERSION

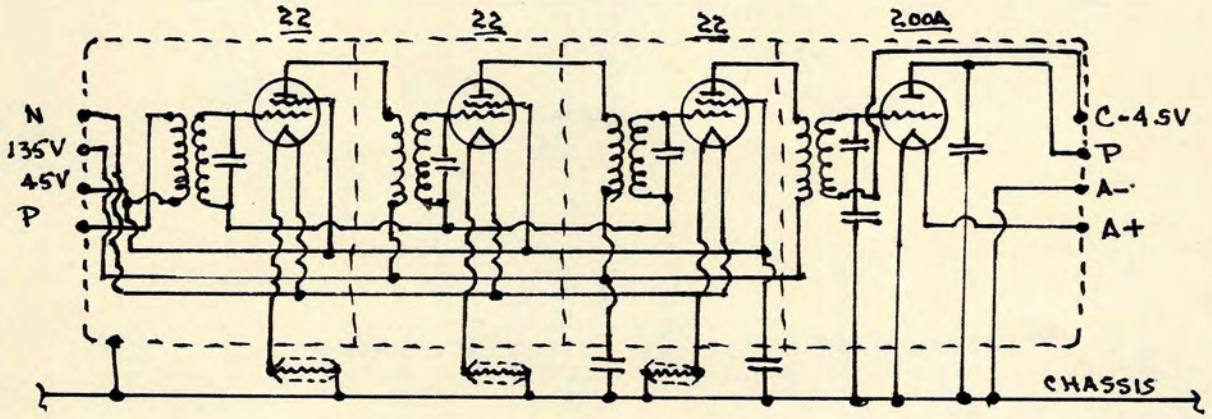


1927 VERSION

SILVER-MARSHALL LAB SUPER-HET, 1927
(Sht. 3)



1927 TIME SIGNAL AMPLIFIER (440)



1928 TIME SIGNAL AMPLIFIER (440)

Set was not a "one-spot" receiver between 215 and 455 meters, where stations will be found at two seperate points on the dial. Above or below 215 and 455 meters, stations will come in at one point only. Unit was contained in a plated copper case.

SILVER-MARSHALL LAB SUPER-HET, 1927
(Sht.4)

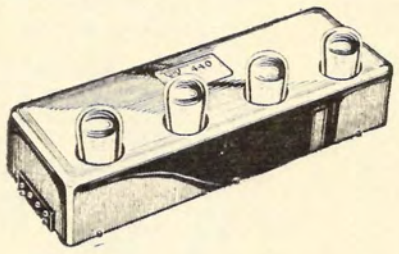
LIST OF PARTS

1928 Model

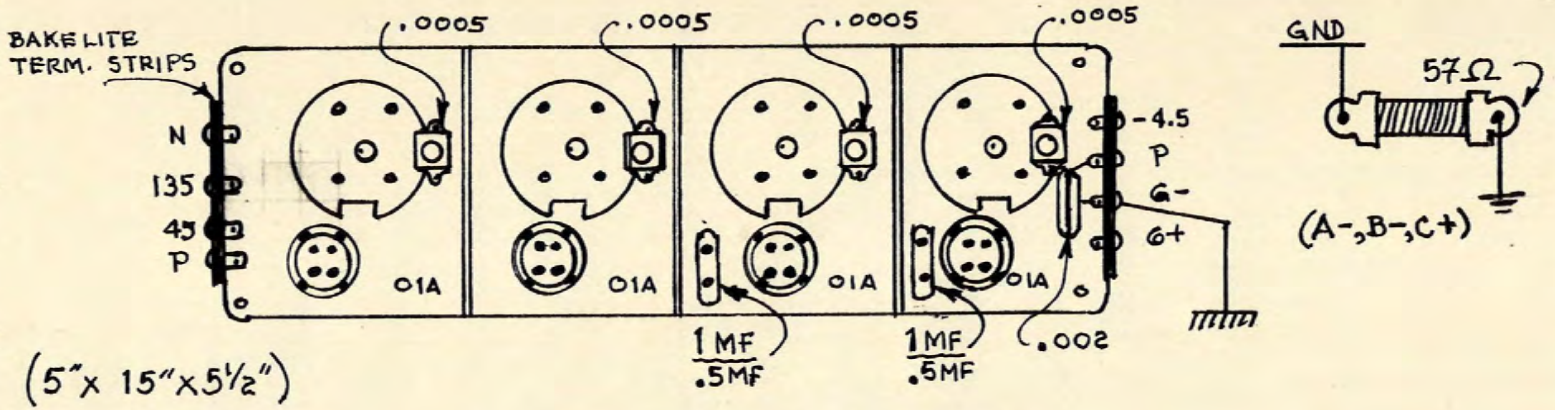
(2) 350 mmf Variables
.000075 mf Fixed Cond.
.00015 mf Fixed Cond.
RFC 2.5 mH
20-Ohm Rheostat
6-Ohm Rheostat
.57-Ohm Resistor
5M-Ohm Grid-Leak
(2) Al. Shields 7.75"x7.75"x5"
(2) Ce-Co "H" Tubes
(2) Ce-Co "F" Tubes
Ce-Co Power Tube
(2) Drum Dial, Single Action
Van Doorn Panel
(2) S-M 111-A Plug-In Coils
S-M 440 Amplifier
(9) Eby Binding Posts

1927 Model

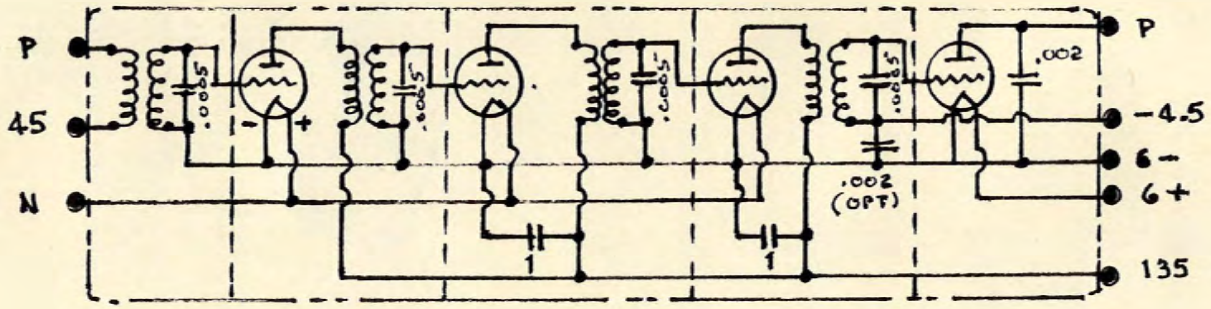
(2) 350 mmf Variables
.000075 mf Fixed Cond.
.00015 mf Fixed Cond.
RFC S-M 275
200-Ohm Pot.
3-Ohm Rheostat
(2) .25 mf Cond.
2-Ohm Grid-Leak
S-M 805 Drum Dials
(2) S-M 111-A Coils
(9) X-L Binding Posts
Van Doorn Panel
S-M 440 IF Amplifier
(2) S-M 220 AF Xfrmrs.
(Incidental Hardward
not Listed.)



SILVER-MARSHALL TIME SIGNAL AMPLIFIER 440 EXTERNAL CONFIGURATION. SEE OVER-LEAVES FOR INTERNAL DETAILS.



PLAN VIEW - COVER REMOVED

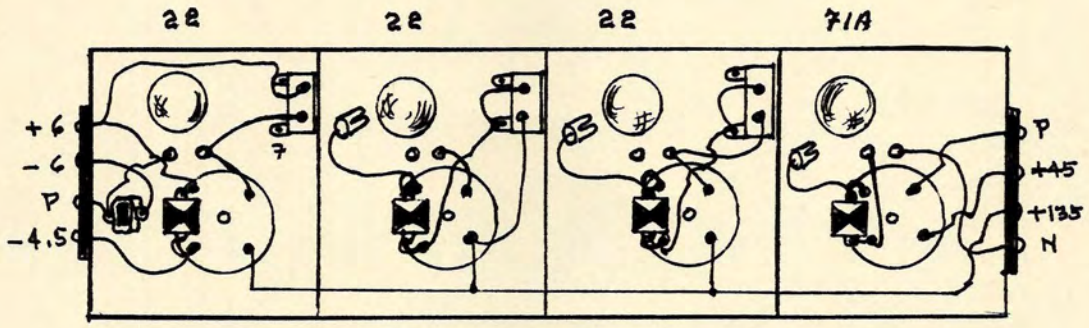


SILVER-MARSHALL 112KC AMPLIFIER, 1927

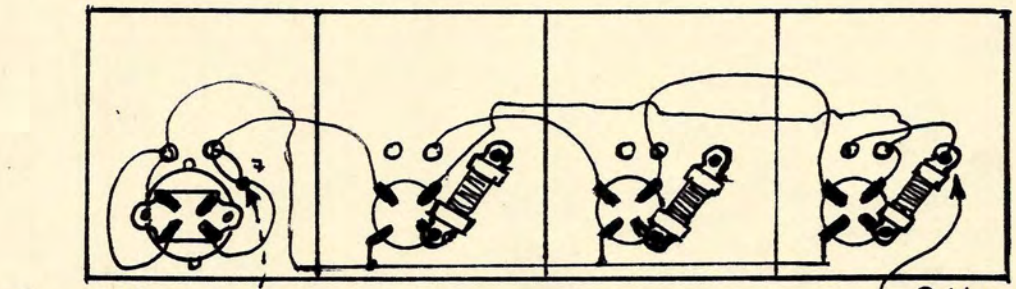
NOTES:
1. Later version used (3) 22 and (1) 200A; along with a 10-ohm resistor in the negative leg of the 22 and an additional .5 capacitor.
2. This was essentially a high-grade amplifier for IF; Remler's was better.
3. The first S-M 112KC Time Signal Amplifier, for which this unit was designed, proved commercially unfeasible. The design eventually emerged as the 620 S.G.

(GND connexion to any receiver using this unit must add the configuration shown in upper right-hand corner of this sheet.)

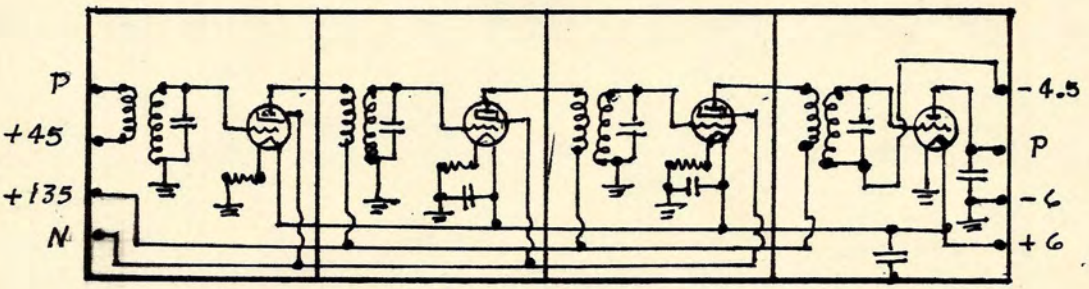
S-M TIME AMPLIFIER w/ SCREEN-GRID TUBES: 1928



PLAN VIEW



BOTTOM VIEW

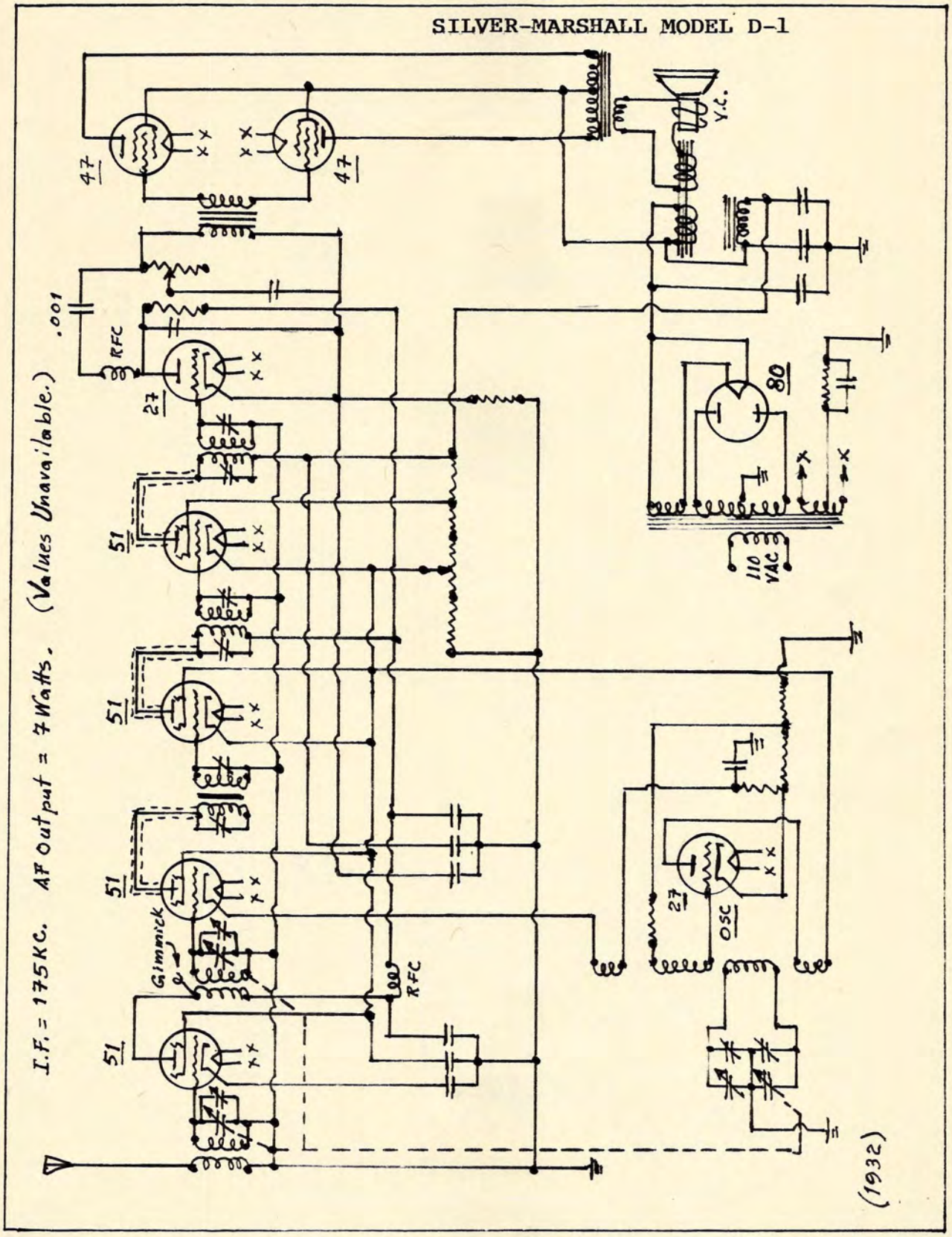


(Chassis GND)

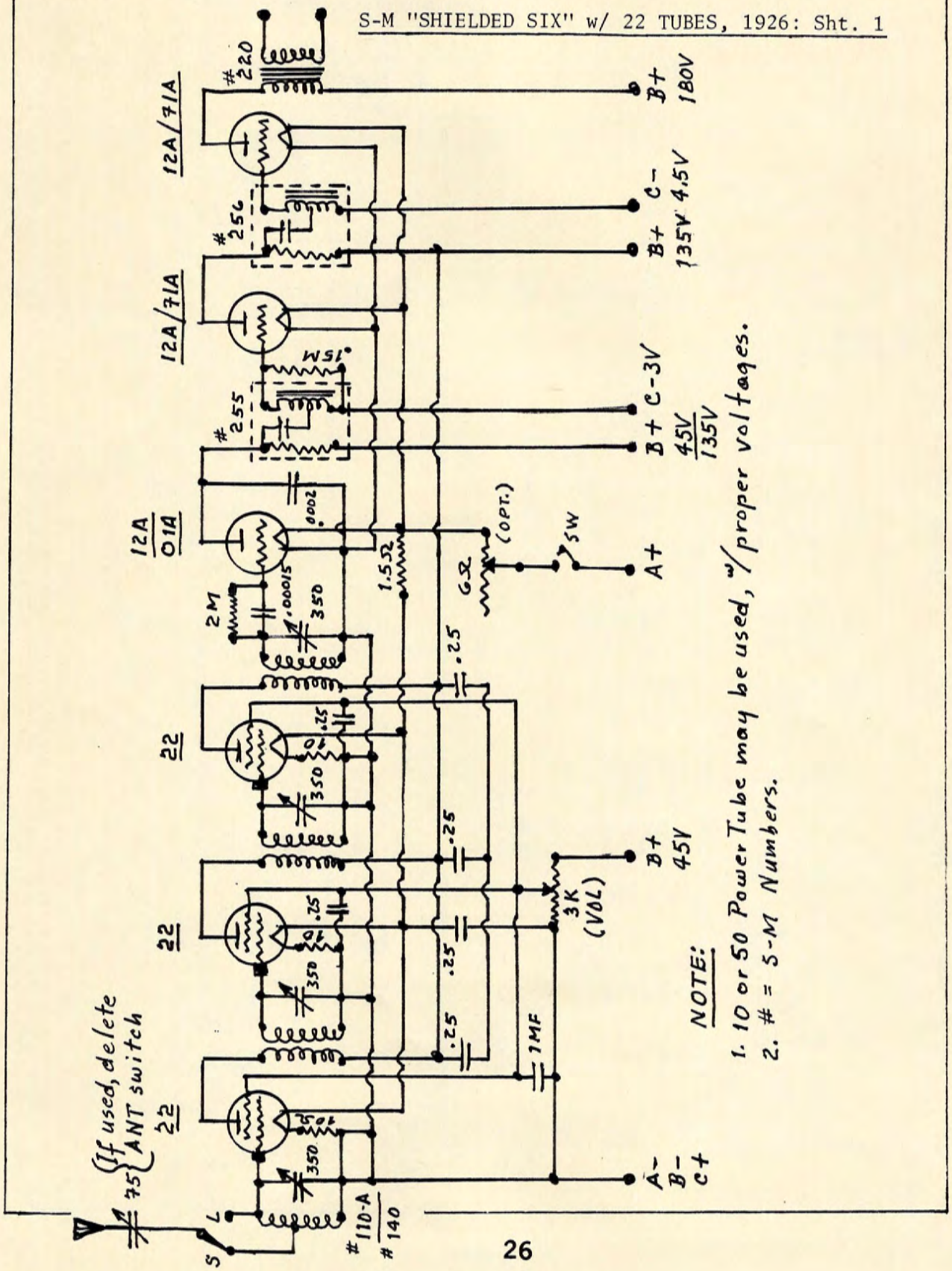
SCHEMATIC

(CBG28)

NOTES


SILVER-MARSHALL MODEL D-1
I.F. = 175KC. AF Output = 7 Watts. (Values Unavailable.)
.001
RFC
47
47
27
51
51
51
51
Gimmick
RFC
27
OSC
80
110 VAC
Y.C.
(1932)

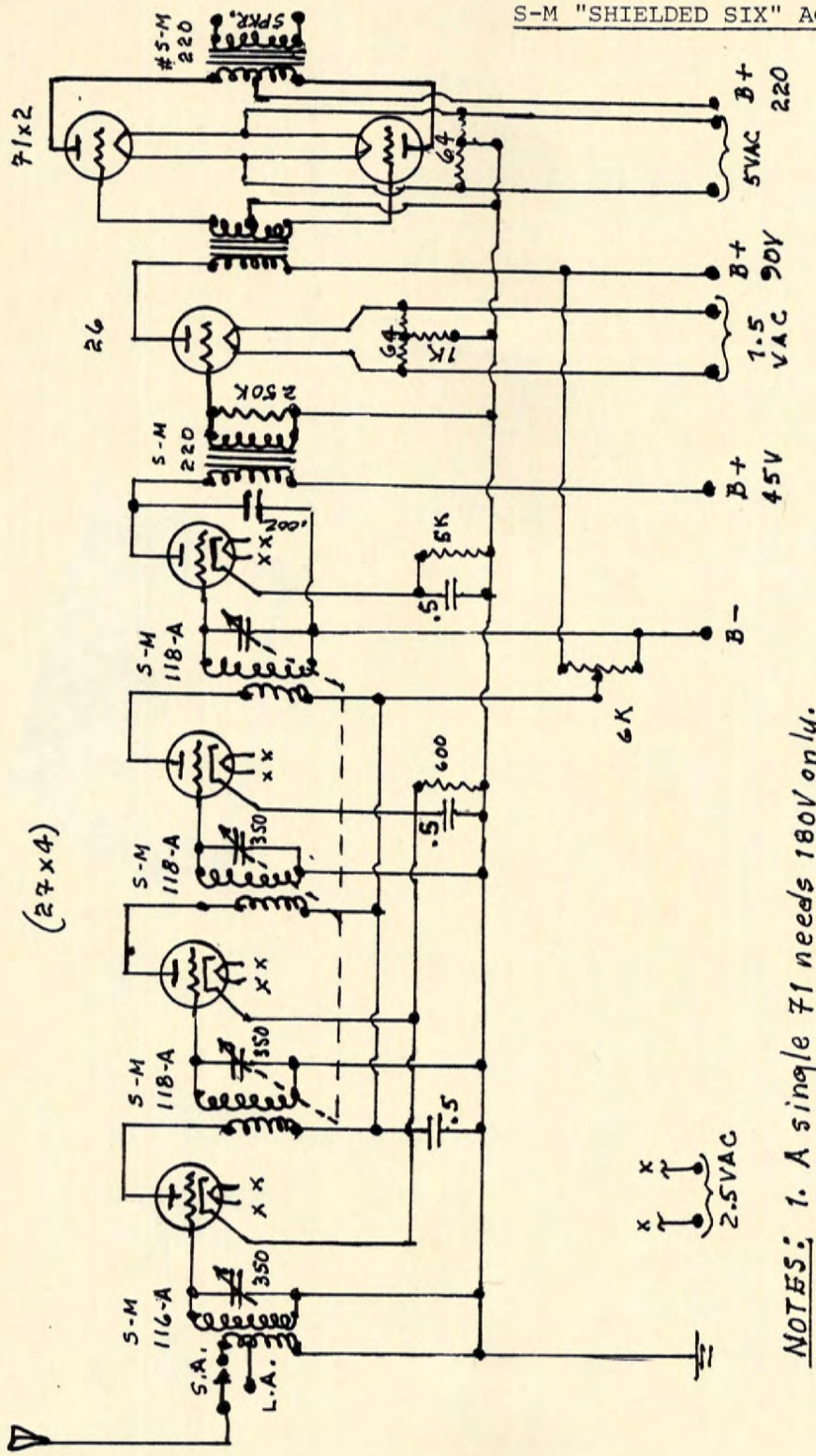
S-M "SHIELDED SIX" w/ 22 TUBES, 1926: Sht. 1



NOTE:

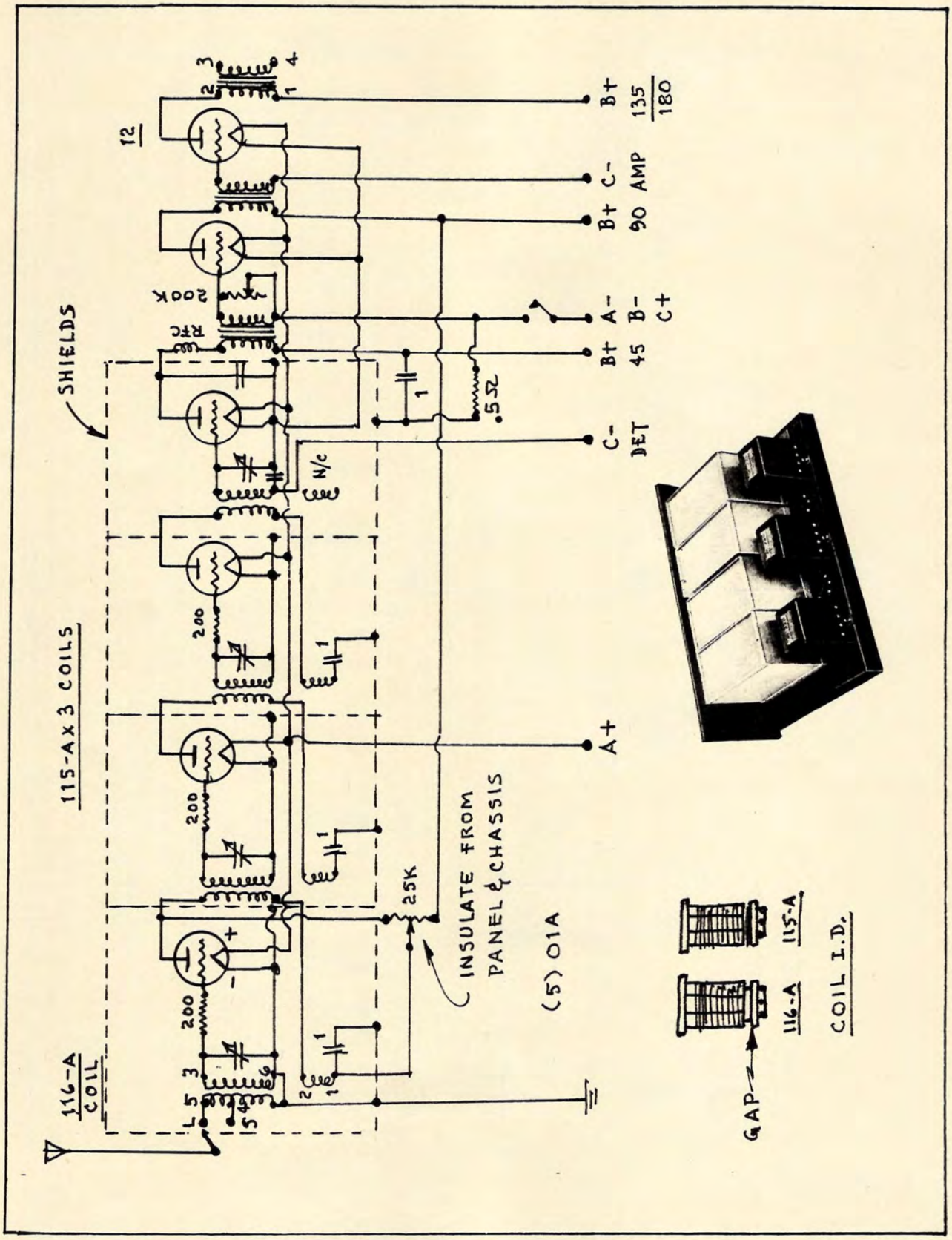
1. 10 or 50 Power Tube may be used, w/ proper voltages.
2. # = S-M Numbers.

S-M "SHIELDED SIX" AC MODEL, Sht. 2

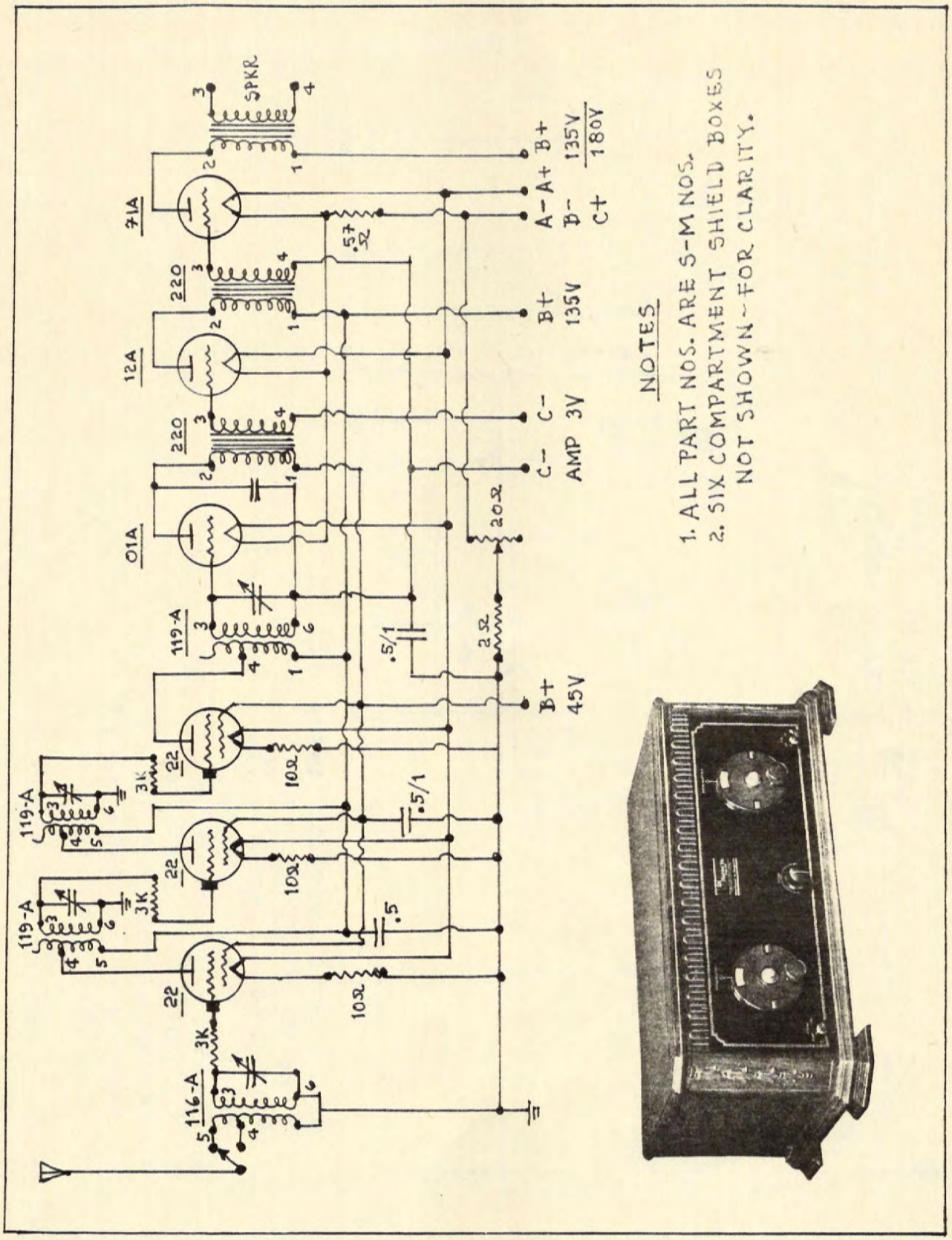


NOTES: 1. A single 71 needs 180V only.
2. Range w/ STD. coils = 200-500 Meters.
3. Range to 3,000 Meters w/ (2) additional coil sets, 4 coils each.
4. AF cut-off = 5,000 ~.

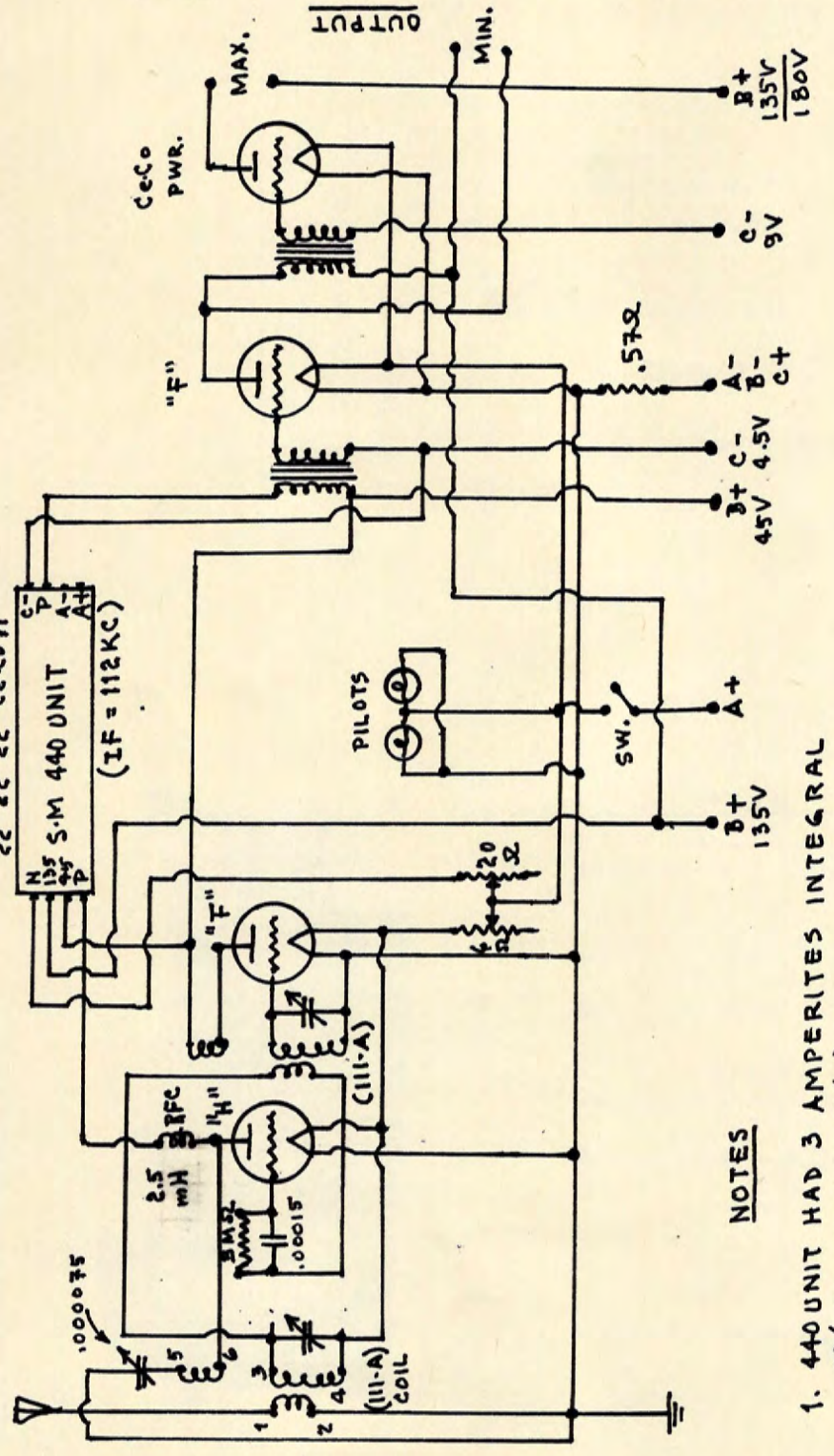
S-M "SHIELDED SIX", BATTERY MODEL, Sht. 3



S-M "SHIELDED SIX" MODEL 630, 1928; Sht. 4



S-M SCREEN-GRID SUPER-HET RCVR., 1928

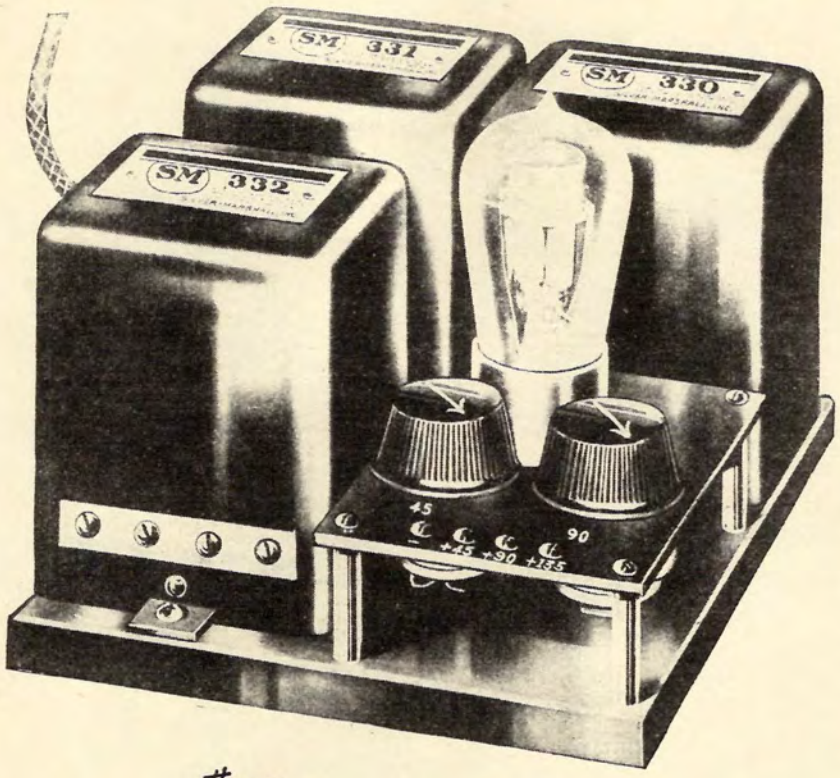


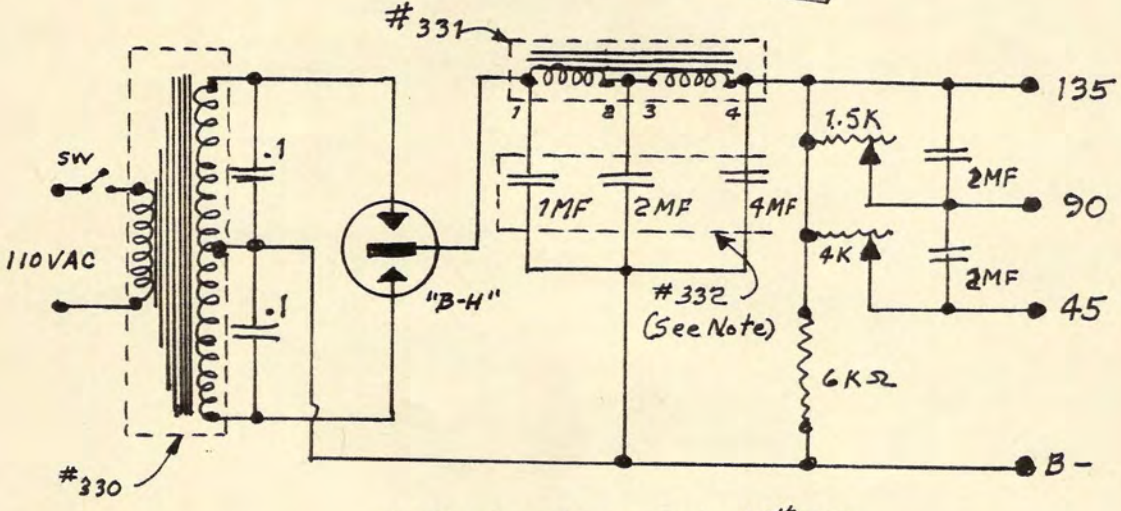
NOTES

1. 440 UNIT HAD 3 AMPERITES INTEGRAL W/ 22 FILAMENT(-) LEADS.
2. VARIABLES = 375 MMFD (2).
3. PANEL = 7"X24" (Metal).
4. CHASSIS = 10"X23" X 1½".
5. 9 BINDING POSTS REQUIRED.
6. COVERAGE = 30~3000 METERS.
7. SEE P. 25B FOR 440 LAYOUT.
8. Ce-Co TUBES THROUGH-OUT.

NOTES

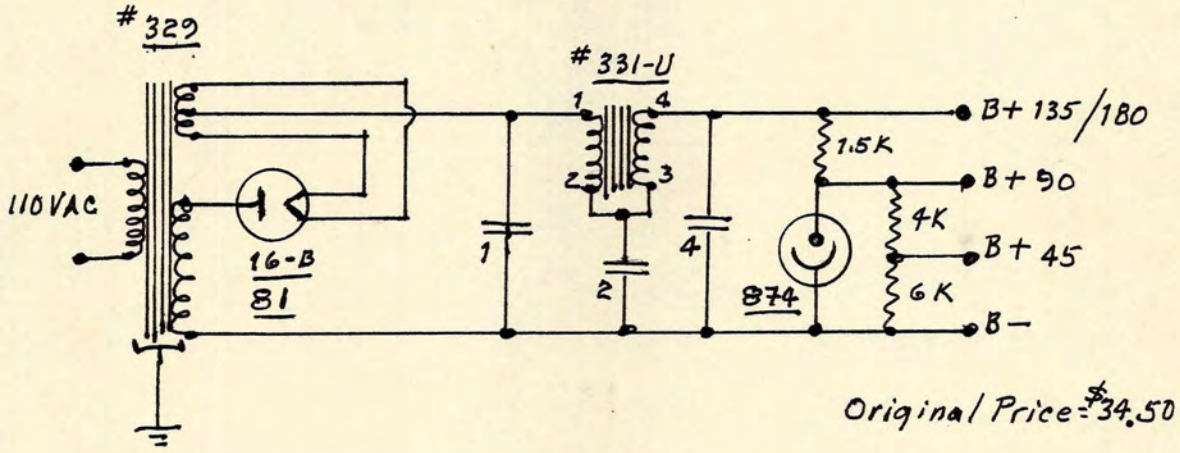
S-M 650-B, 1926 Version



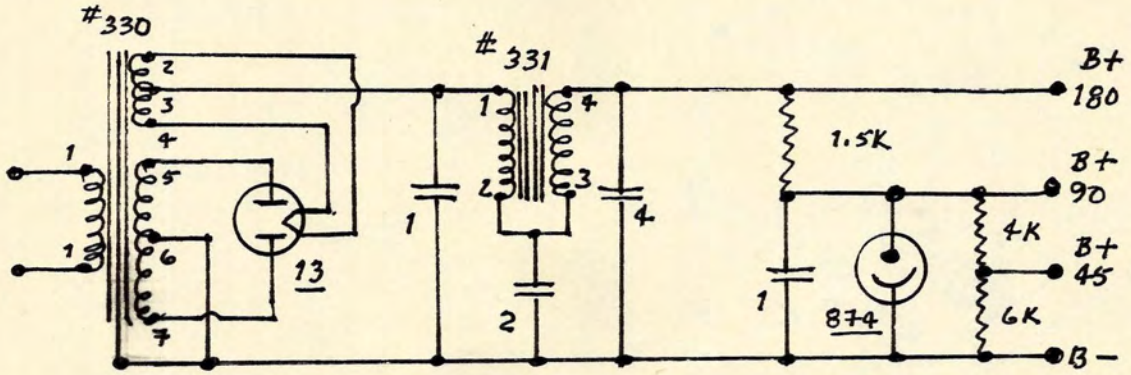


NOTE: Condenser Block #332
Contains All Capacitors Shown.
"Clarostat" Rheostats.

S-M 650 "B"-SUPPLY, 1924

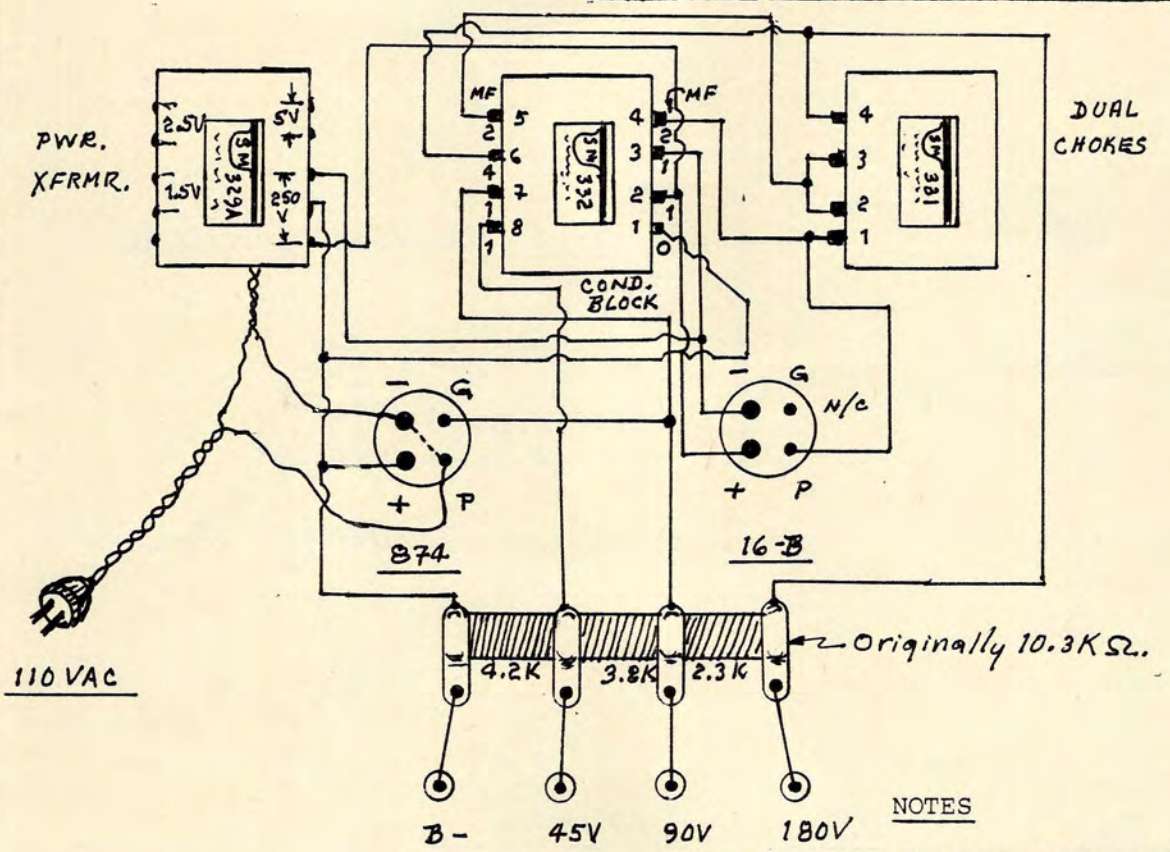


Original Price = $34.50



S-M 652 "B"-RESERVOIR, 1927

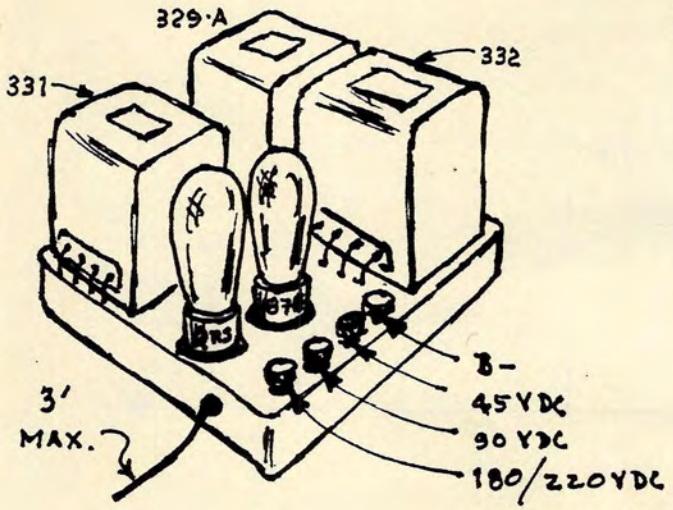
S-M "SHIELDED SIX" POWER SUPPLY, 1927



NOTES

1. C-Bias obtained through set.
2. Circuit completed when 874 is inserted in socket.

Q-R-S F/W Rectifer Tube.
874 V.R. Tube.
7" x 7" steel base-plate.
S-M 329-A Power Xfrmr.
331 Chokes (2)
511 Filter Block.



(Refer to Page 26 for Rcvr. Schematic.)

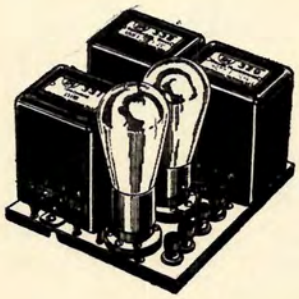
ORIGINAL PARTS (1926)

S-M 329-A Power Xfrmr.
331 "Uni-Choke".
332 (TOBE) Cond. Block.
874 V.R. Tube (Cunningham).

SILVER-MARSHALL

652-A ELIMINATOR, 1926

(Also Used w/ The "Shielded Six.")



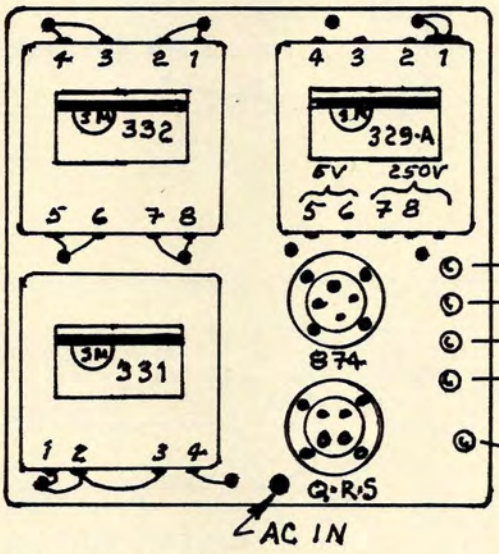
332 COND. BLK.

#		
1	=	0 MFD
2	=	.1
3	=	.1
4	=	2
5	=	2
6	=	4
7	=	1
8	=	1 MFD

331 CHOKE

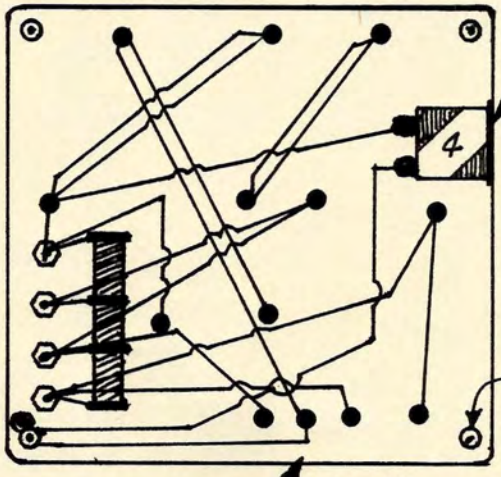
1-2 = Low

3-4 = High



PWR. XFRMR.

PLAN VIEW



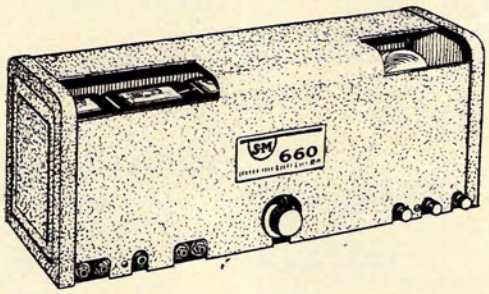
10,300K TOTAL

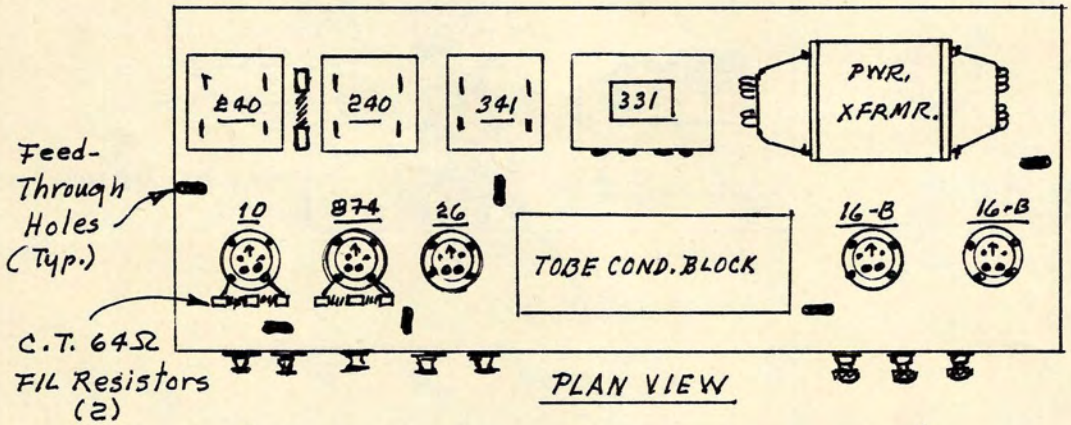
- 4.2KΩ
- 3.8KΩ
- 2.3KΩ

FRAME GND.

BOTTOM VIEW

S-M 660-240 "UNIPAC" POWER AMPLIFIER; Sht.1

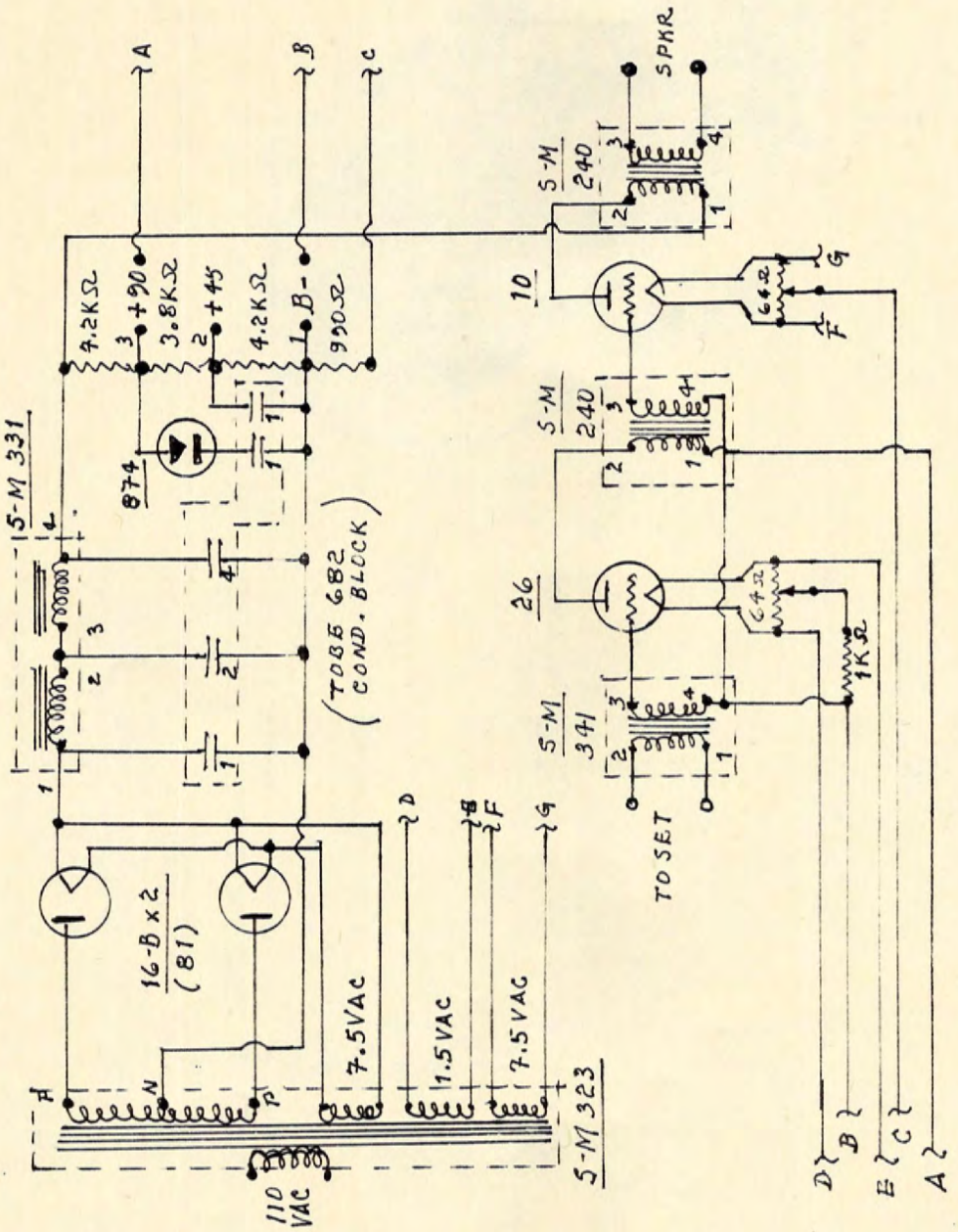




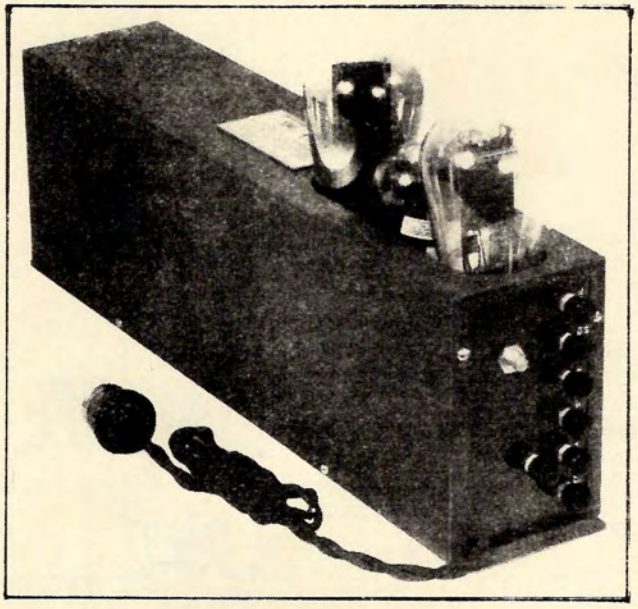
(Power Resistors Mounted Under Chassis.)

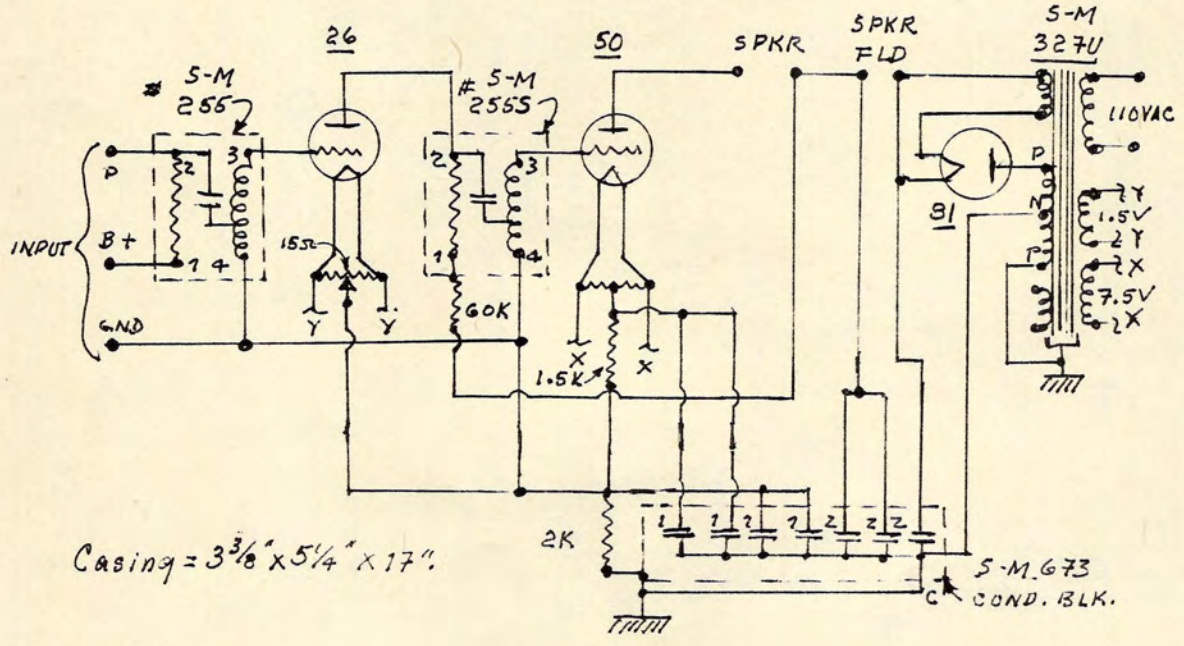
(CB-12-27)
$81.25

S-M 660-240 "UNIPAC" POWER AMPLIFIER; Sht.2



S-M 678 2-STAGE AF AMPLIFIER, 1928

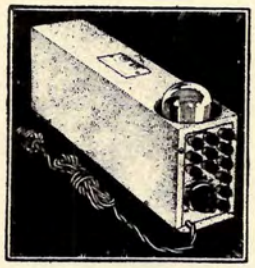


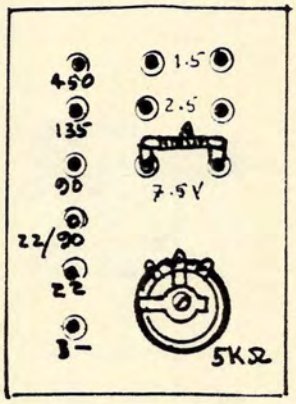


(C B W·28)

S-M #675 A-B-C SUPPLY, 1929

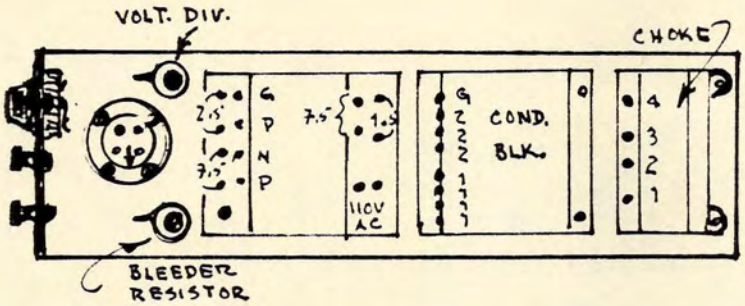
(This unit was designed by Graymore Radio, Chicago: kit #35; wired #58.)





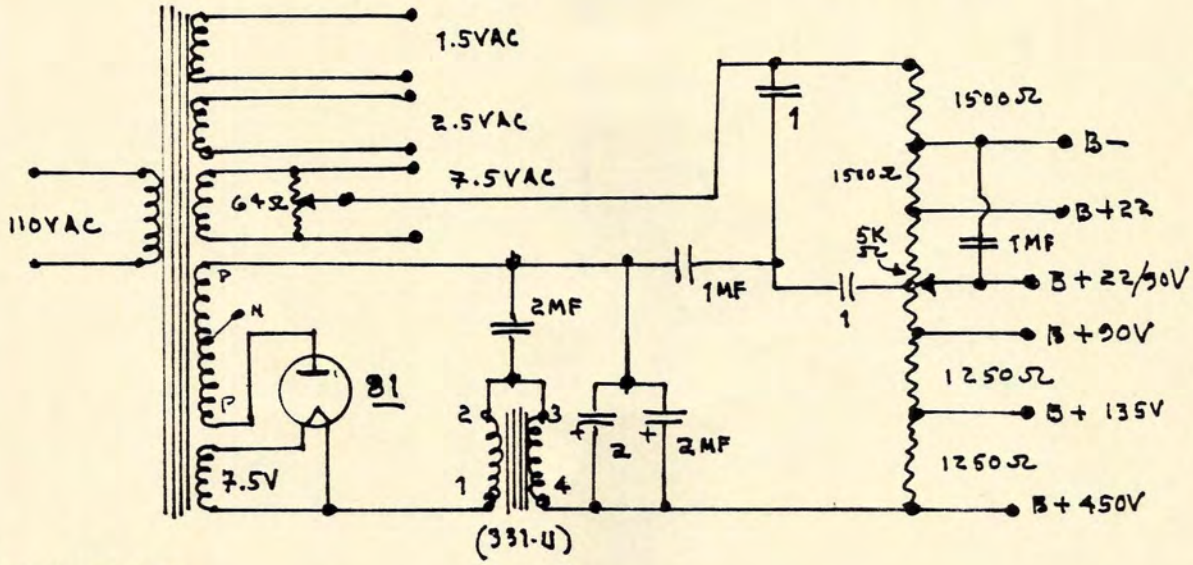
REAR VIEW
W/O PANEL

(12 BIND. POSTS)

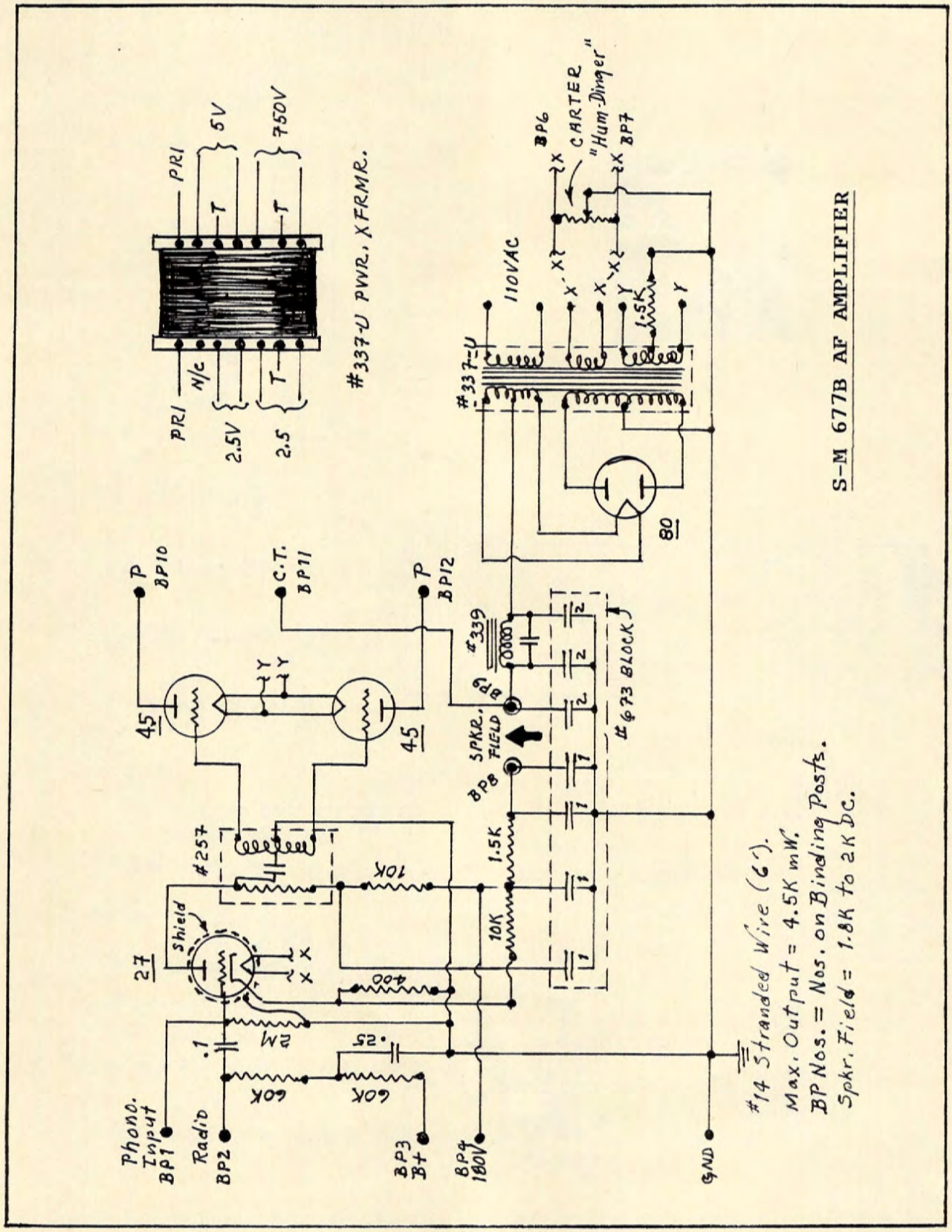


VOLTAGE W/O LOAD:

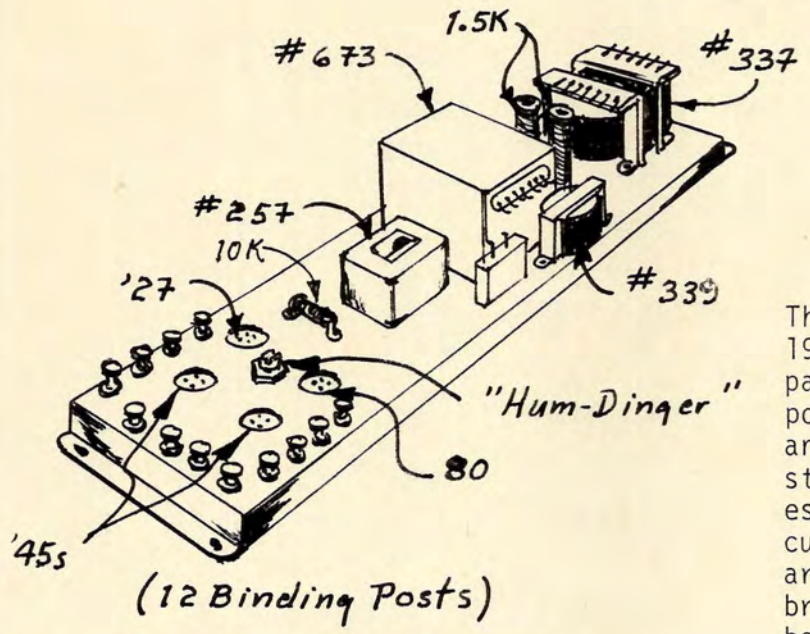
22V = 55V
90V = 210V
135V = 250V
450V = 510V



(RW 1-12-29)


S-M 677B AF AMPLIFIER
#337-U PWR. XFRMR.
PRI
5V
750V
N/c
2.5V
2.5
CARTER "Hum-Dinger"
BP6
BP7
110VAC
#337-U
1.5K
80
45
45
27
#257
#339
#673 BLOCK
SPKR. FIELD
BP8
BP9
C.T. BP11
P BP10
P BP12
Shield
10K
1.5K
10K
400
.1
.25
2M
60K
60K
Phono. Input BP1
Radio BP2
BP3 B+
BP4 180V
GND
#14 Stranded Wire (6').
Max. Output = 4.5K mW.
BP Nos. = Nos. on Binding Posts.
Spkr. Field = 1.8K to 2K DC.

S-M 677B AF AMPLIFIER; Sht. 2



STEEL CHASSIS W/ COVER REMOVED

The 677B evolved from the 1929 amplifier sketched on page 34. It was a bit more powerful than the 1929 job and both were easy to construct. There was nothing esoteric about either circuit, and the schematics are easy to follow. Other brands of components may be substituted without any problem.

The original chassis was steel, but a wood base-board can easily be utilised, if more convenient, by simply adding another binding post and connecting all components running to GND to it, and connecting the new post to the receiver or tuner GND post.

GENRAL PARTS LIST

#337 Power Transformer.
#257 AF Transformer.
#673 Condenser Block.
#636 Tube Shield (for the '27).
#339 Single Power Choke.

NOTE:

These were all Silver-Marshall items.

Fixed Condensers: .1,.25(2).
Resistors: 60K, 2M, 400, 10K, 1.5K (2), 800.

Carter "Hum-Dinger AR-15 (15-ohms).

Binding Posts = 12 (or 13 if additional GND post is added).

(3) 4-Prong Sockets.
(1) 5-Prong Socket.

6' Cord and Plug.

S-M 677B AF AMPLIFIER; Sht. 3

REPRESENTATIVE VOLTAGES (*)

Tap No.	Voltage To GND.
1	320V
2	310
3	230
4	160
5	8
6	110
7	100
8	300
9	50

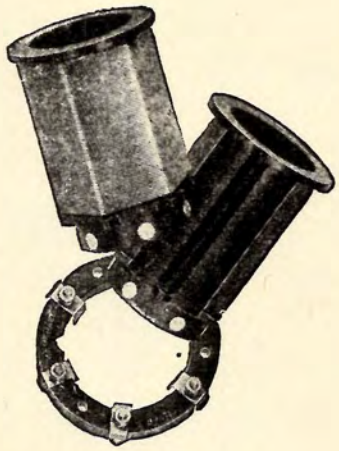
(*) = Do not attempt to alter voltages!

Field excitation to a Dynamic speaker was 1800 to 2000 ohms DC, at jumper shown on the schematic.

REQUIRED:

6' Cord & Plug.
6' #14 Stranded Wire.
12 Binding Posts.

S-M Plug-In Coils



All S-M plug-in coils were designed for use with 350 mmf variables, except that the 117 series - short-wave - required a 140 mmf variable condenser. All series used alphabetical post-scripts and each lettered range was the same, as follows:

A = 190-550 Meters B = 70 - 200 Meters
C = 30 - 75 Meters D = 500 - 1500 Meters
E = 1400 - 3000 Meters

110 SERIES:

A = Two 44½ T, SEC.
2 T, Rotor.
B = Two 11½ T, SEC.
10 T, Rotor.
C = Two 5½ T, SEC.
6 T, Rotor.
D = Two SEC sexions,
7 piles, 20 T each
top sexion; 6 piles
20 T each lower.
60 T, Rotor.
E = 5 piles 44 T each,
top sexion SEC; 4 piles
each, lower sexion.
60 T, Rotor.

111 SERIES:

A = 89½ T, SEC.
44½ T, PRI (slot).
32 T, Rotor.
B = 23½ T, SEC.
24½ T, PRI (slot).
10 T, Rotor
C = 11½ T, SEC.
24½ T. PRI (slot).
6 T, Rotor.
D = 13 piles 20 T each;
99½ T PRI,(slot).
60 T, Rotor.
E = 9 piles 44 T each;
99½ T PRI (slot).
40 T, Rotor.

114 SERIES:

A = 89½ T, SEC.
40 T PRI (slot).
8 T Inner PRI.
B = 23½ T, SEC.
No slotted PRI.
8 T, Inner PRI.
C = 11½ T, SEC.
No slotted PRI.
13½ T PRI on Stator.

D = 13 piles 20 T each, SEC.
99½ T PRI (slot).
49½ T Inner PRI.
E = 9 piles 44 T each, SEC.
99½ T PRI (slot).
150 T Inner PRI.

114-SG = This was a coil to be used with screen-grid tubes, as "A".

S - M PLUG-IN COILS: Sht. 2

115 SERIES:

A = 90¼ T, SEC.
9½ T PRI (slot).
35¼ T, Inner PRI.
D = 13 piles, 20 T each.
1/2 T, PRI (slot).
45½ T, Inner PRI.
E = 9 piles 44 T each.
1/2 T, PRI (slot).
150 T, Inner PRI.

117 SERIES: (Short-Wave)

M = 16 T, top sexion;
26 T, bottom sexion.
N = 10 T, top sexion;
13 T, bottom sexion.
O = 7 T, each sexion;SEC.
P = 4 T, each sexion; SEC.

NOTE: The 117 Coil Set was offered at $10, consisting of all four coils, plus a 140 mmf S-M variable.

116 SERIES:

A = 89½ T, SEC.
2½ TPRI (slot).
15 T top sexion:
19½ T bottom sexion.
D = 13 piles, 20 T each.
1/2 T, PRI (slot).
25 T top sexion;
24½ T bottom sexion.
E = 9 piles, 44 T each.
1/2 T, Inner PRI.
25 T, Inner PRI.
75 T, top sexion;
74½ T, bottom sexion.

118A = 90 T, SEC.
4½ T, PRI (slot).
25 T, Inner Pri.
Range = 190-550 Meters.

119A = 90 T, SEC.
64 T, Inner PRI, tapt
@ 38, 51, 64 T.
Range = 190-55- Meters.

140 SERIES: These were "universal" coils, with one coil having windings to be connected in series with the ANT.

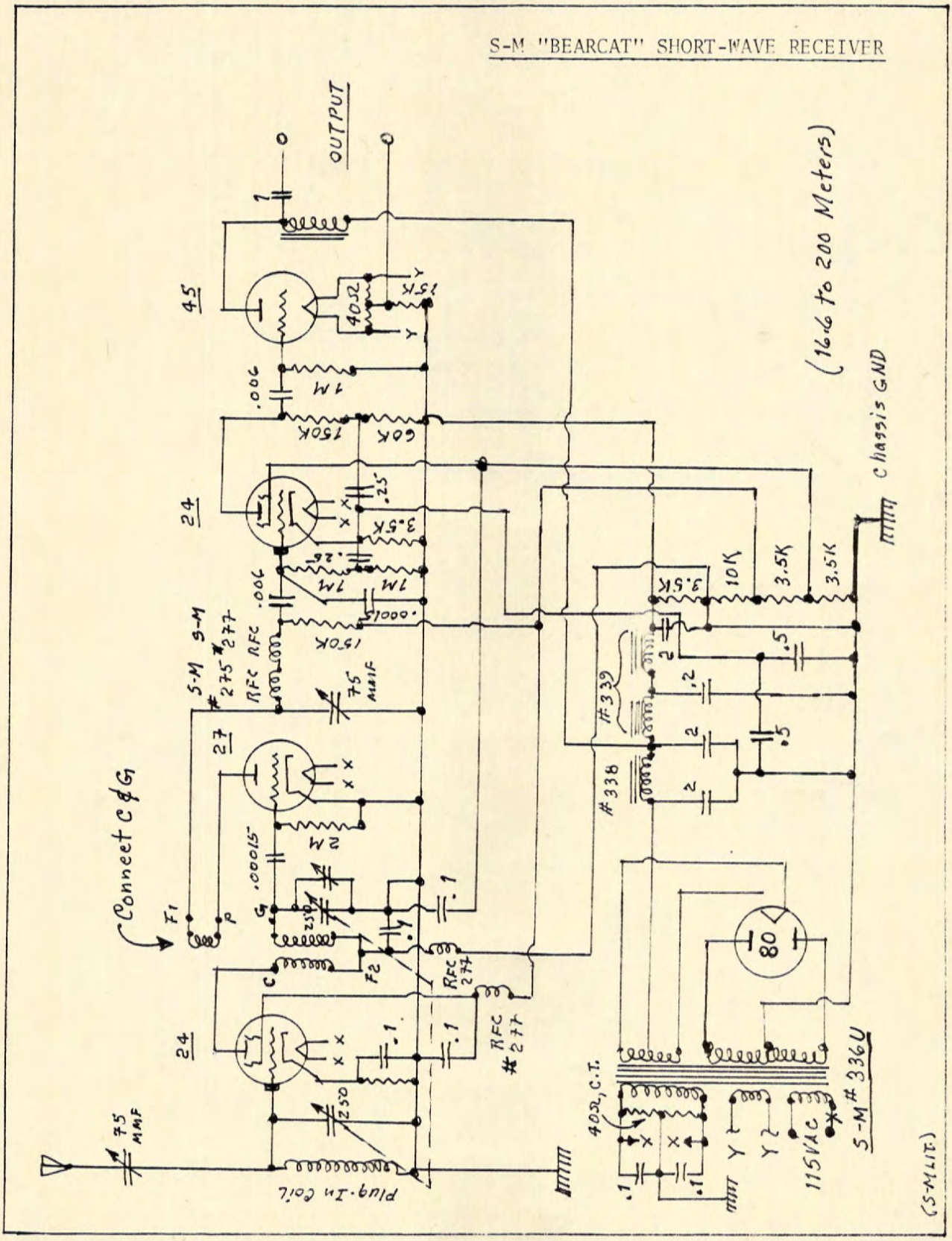
A = 10 T, SEC.
5½ T, PRI.
B = 13½ T, SEC.
5½ T, PRI.
C = 25½ T, SEC.
9½ T, PRI.
D = 49½ T, SEC.
15½ T, PRI.

SEC of A,B,C wound with #22 Enamelled.
PRI wound with #34 DCC.

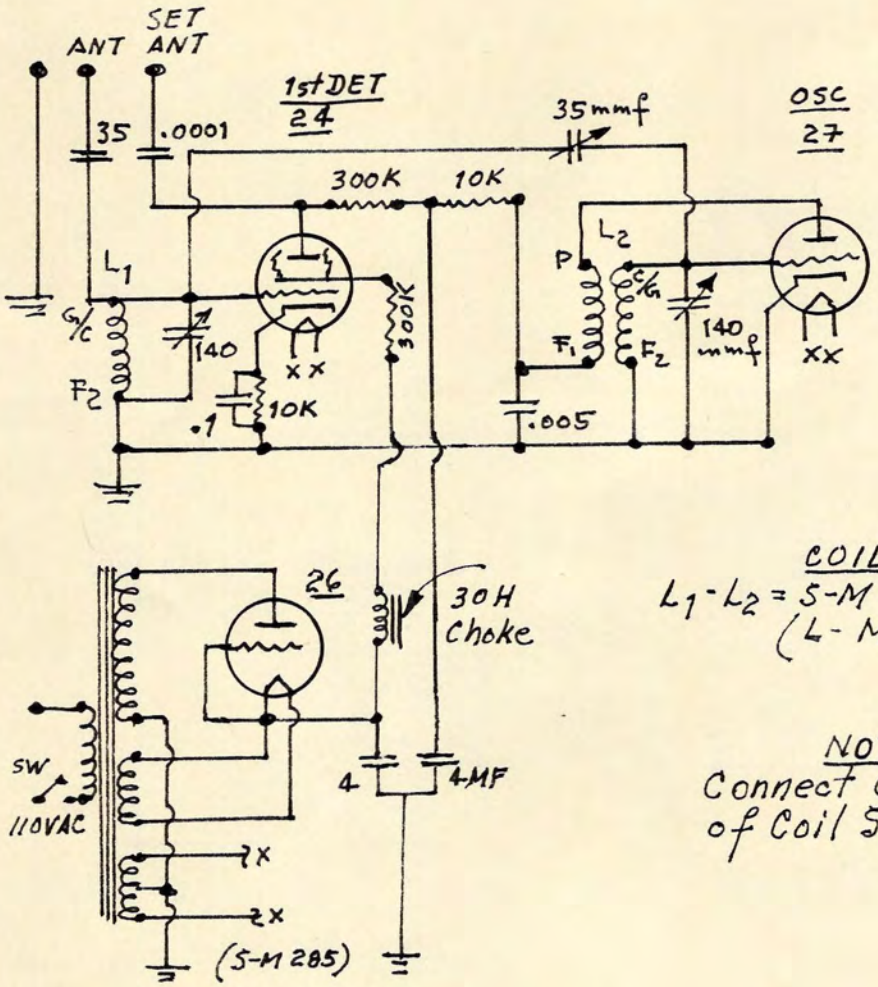
SEC of D wound with #24 DCC.
PRI wound with #34 DCC.

(For additional data for other commercially manufactured coils, refer to Volume VII of Vintage Radio Identification Sketch-Books of D.H.Moore.)

* * *


S-M "BEARCAT" SHORT-WAVE RECEIVER
(16 to 200 Meters)
OUTPUT
Chassis GND
Connect C & G
Plug-In Coil
75 MMF
S-M #336U
115 VAC
#338
#339
RFC #277
(S-M LIT.)

S-M SHORT-WAVE CONVERTER



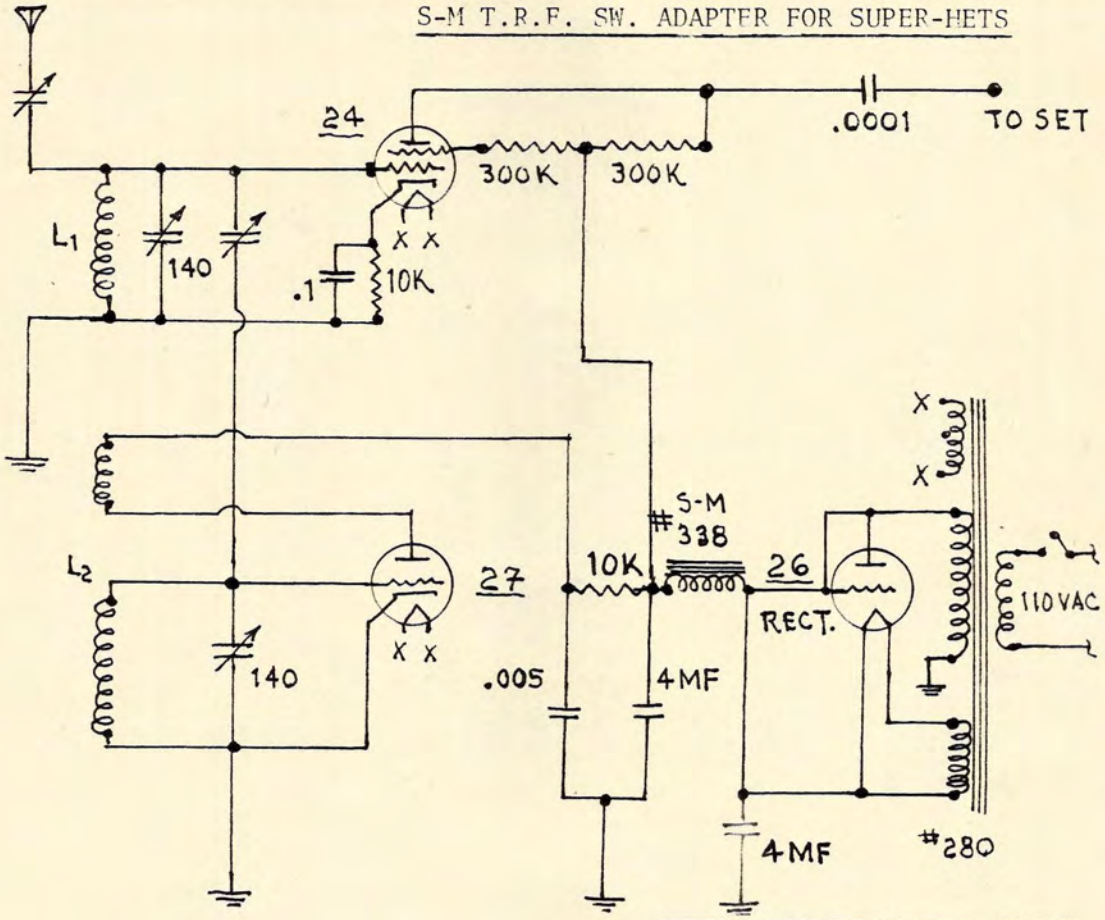
COILS
L_1-L_2 = S-M 131 Series, (L-M-W-O)

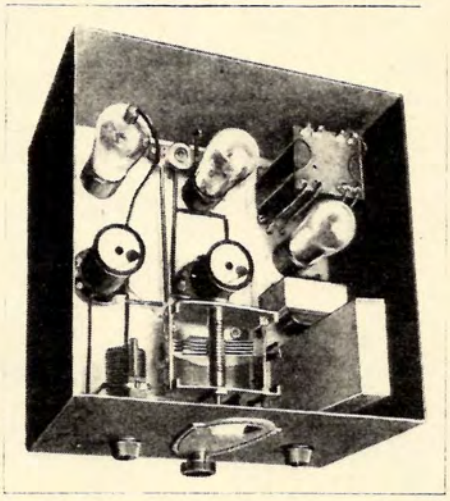
NOTE
Connect Grid & Cathode of Coil Sockets together.

NOTES:
1. DET variable setting was not critical.
2. OSC variable required vernier knob.
3. This converter was never very popular, and was rather ineffective, even with S-M receivers.

(OSWRM)

S-M T.R.F. SW. ADAPTER FOR SUPER-HETS



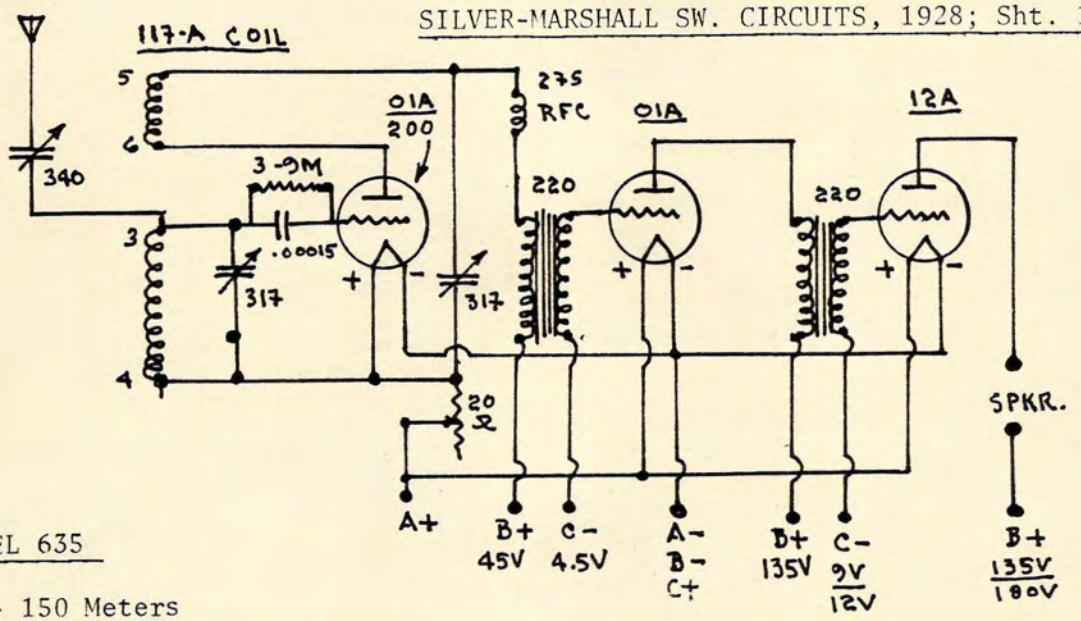


NOTES:

1. Model 738 & Shield Assembly.
2. L.H. Knob Controls Antenna.
3. R.H. Knob Is ON-OFF Switch.
4. Centre Knob Controls SW. Oscillator.
5. S-M Series 131 Series Coils Used.
6. National "E" Dial.
7. Set Tuning Dials Between 800 & 1,000 KC.
8. Tune Across SW. Bands With Adapter.

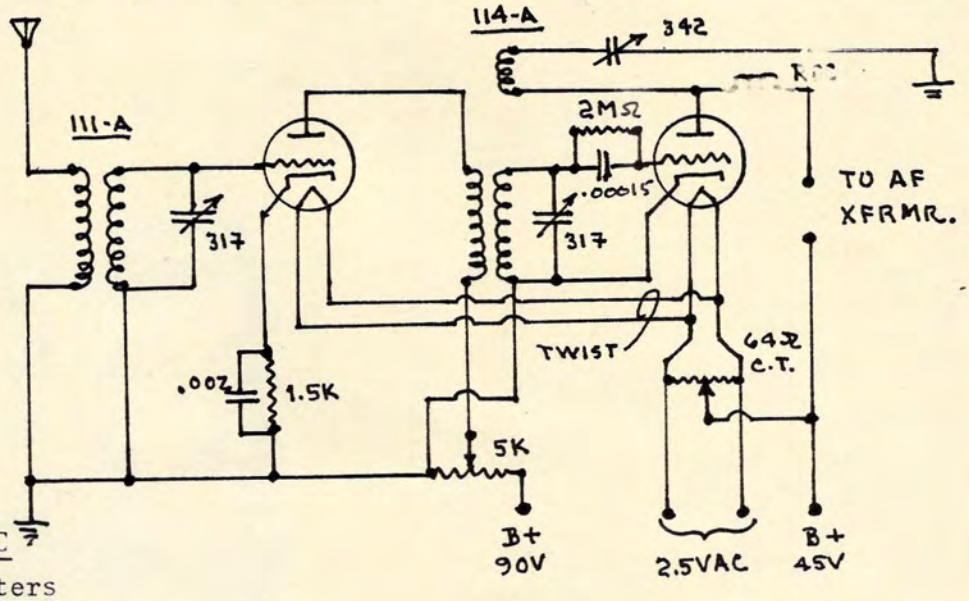
(RCB - 9-'30)

SILVER-MARSHALL SW. CIRCUITS, 1928; Sht. 1



MODEL 635

18 - 150 Meters



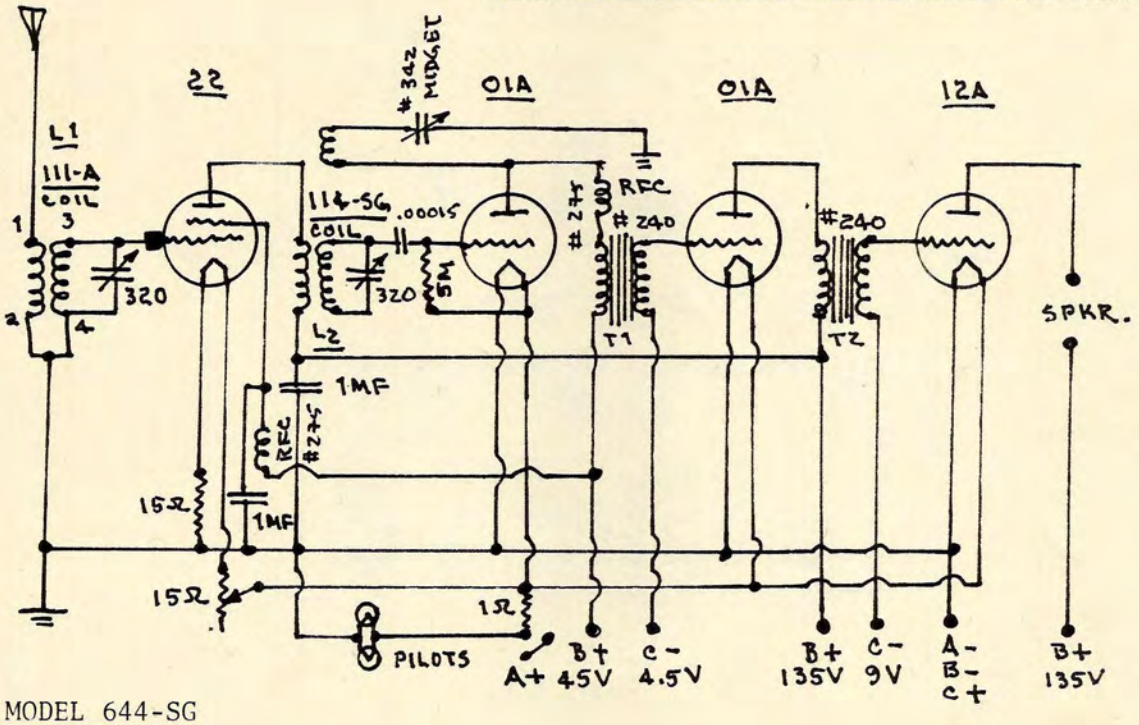
MODEL 642-AC

16 - 200 Meters

NOTE:

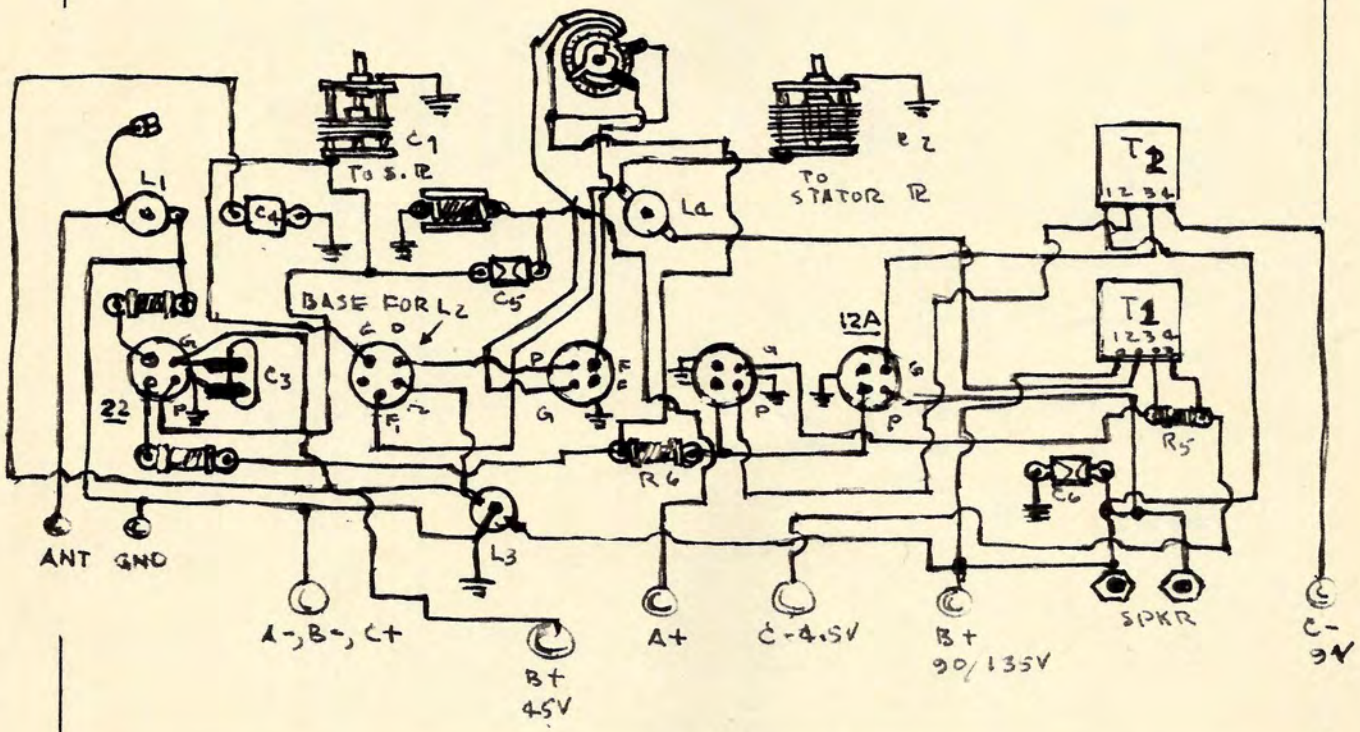
This model was also known as the "UNIVERSAL ALL-WAVE TUNER", available as Models 632 & 644, as [illegible] or Screen-Grid.
S-M RFC [illegible]175 = 75mH.
Three-digit numbers are S-M numbers.

SILVER-MARSHALL SW. CIRCUITS, 1928; Sht. 2

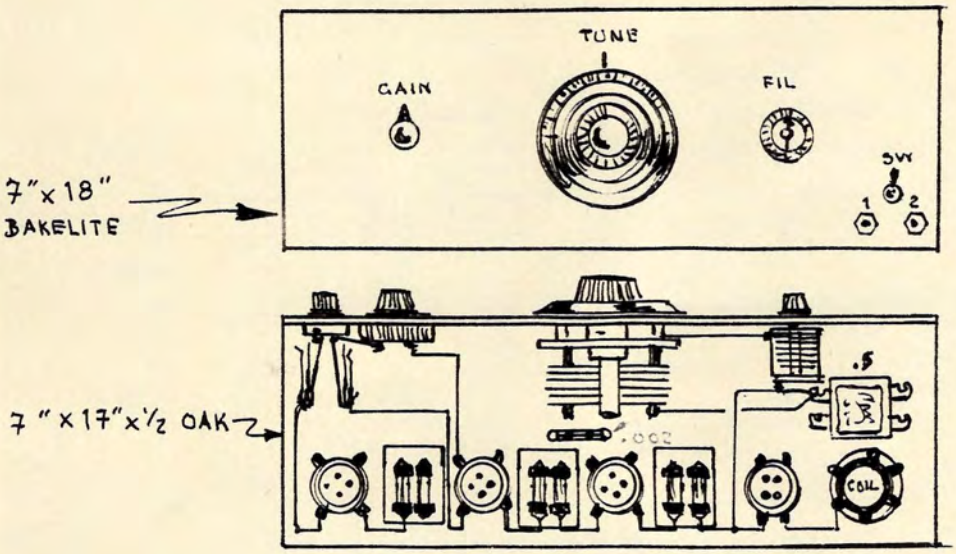


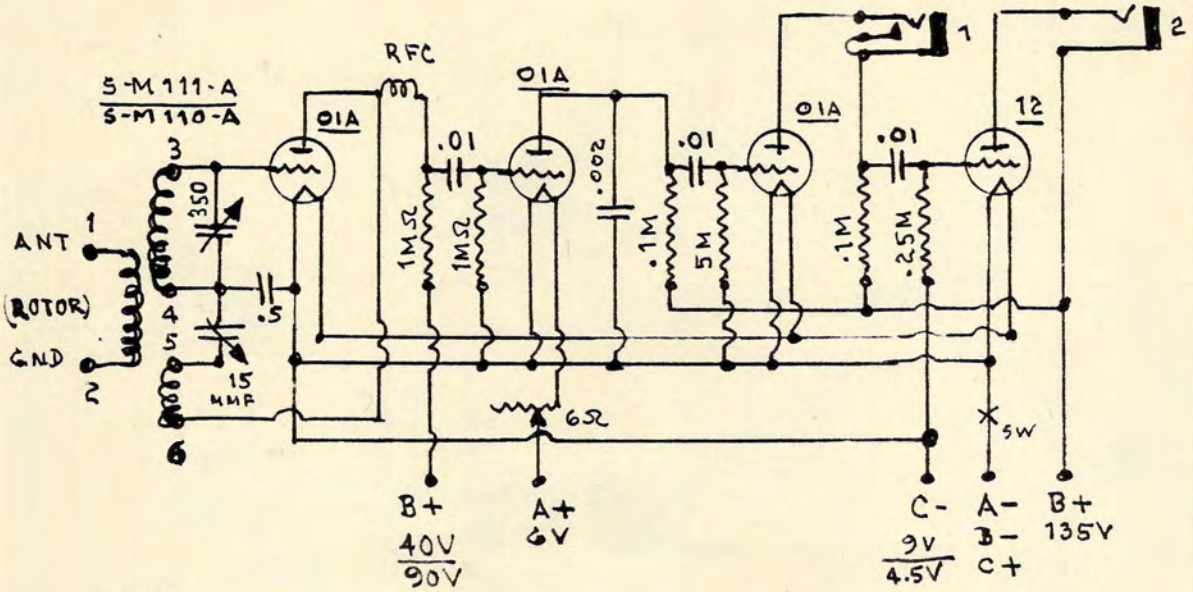
MODEL 644-SG

16 - 200 Meters



S-M ALL-WAVE "REGENERATOR", 1926



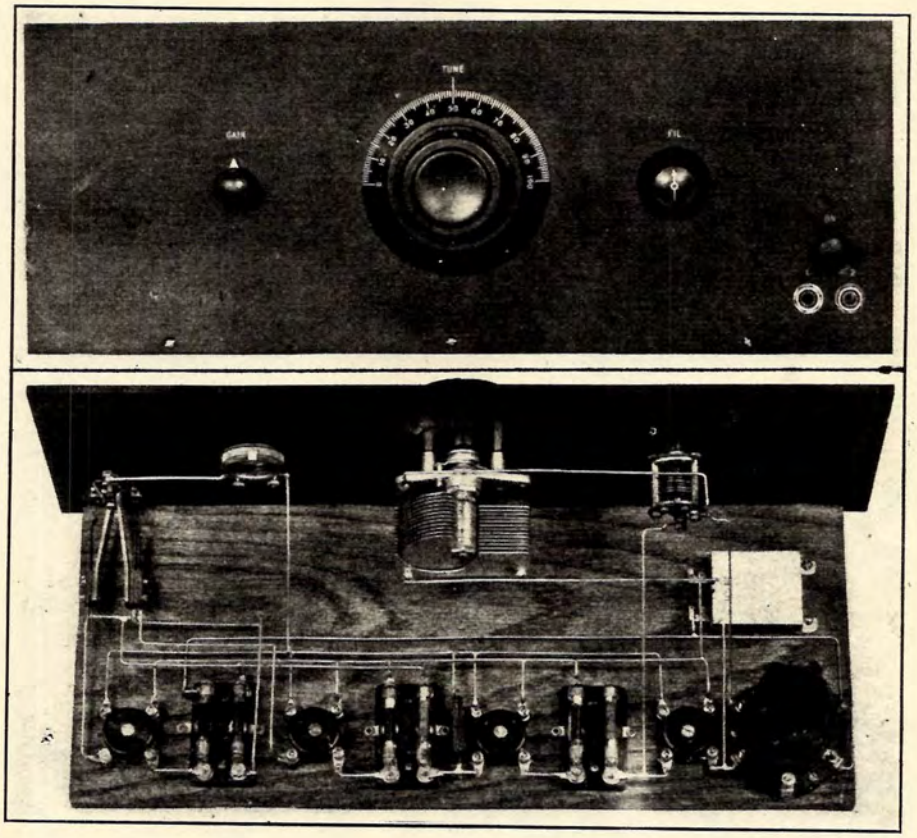


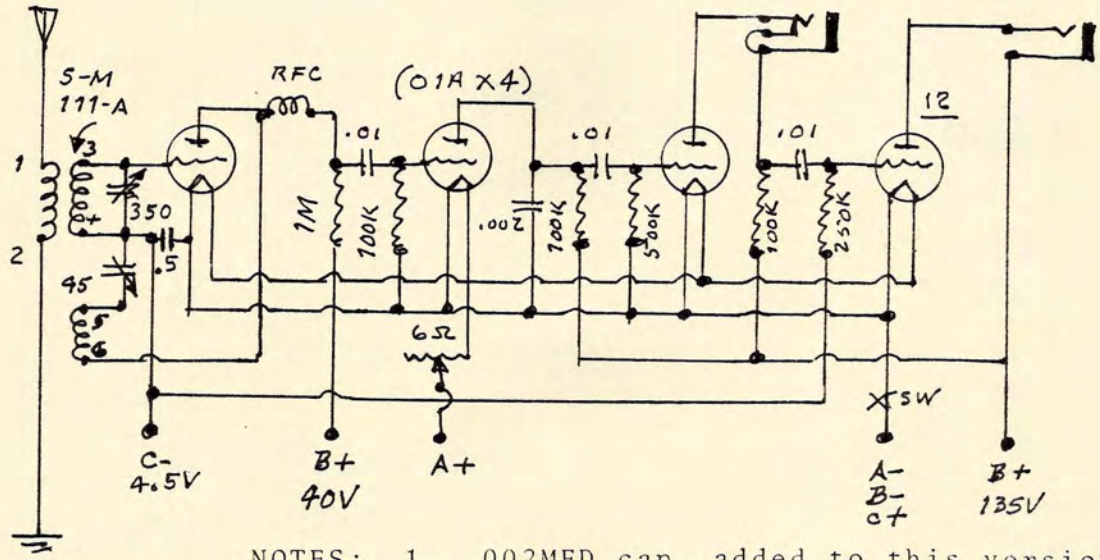
NOTES:

1. Daven "Resisto-Couplers" (3).
2. RFC may be S-M 275 or Aero 60: or 300 turns of #32 DCC wire on a 1" Ø form.
3. Coil has adjustable rotor for ANT, #1 & 2 term.
4. 15mmf midget variable may be substituted by a 25K-ohm pot across 5 & 6 of coil.
5. 12' square buss-bar required.

(RW 3-27-26)

SILVER ALL-WAVE REGENERATOR, 1926



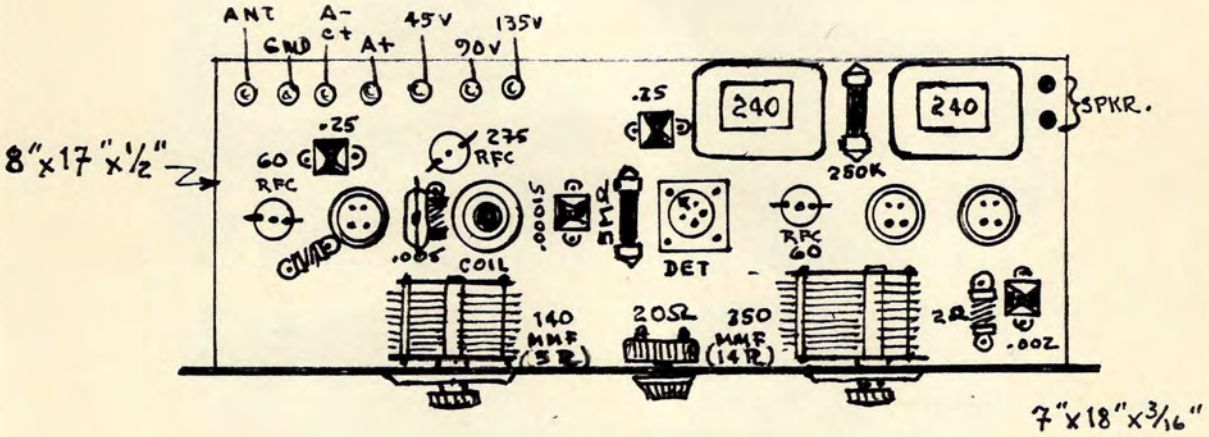


NOTES:
1. .002MFD cap. added to this version.
2. Resistor values changed.
3. Midget variable value changed.

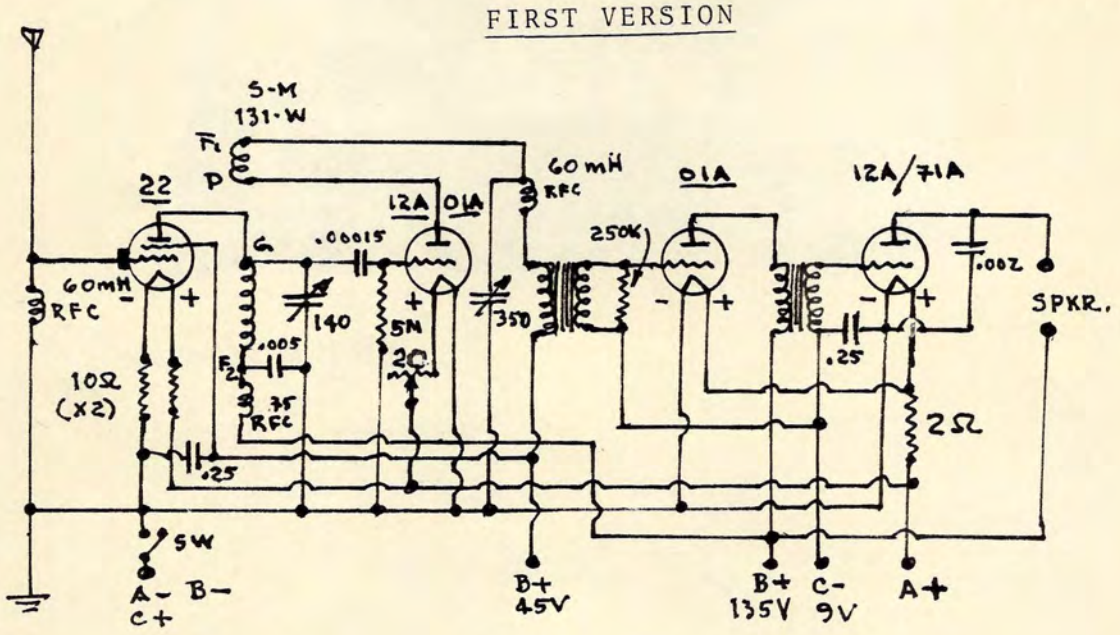
(RW3·27·26)

S-M R.T.W.F. SW RECEIVER, 1926/1929

(Sht. 1)



FIRST VERSION

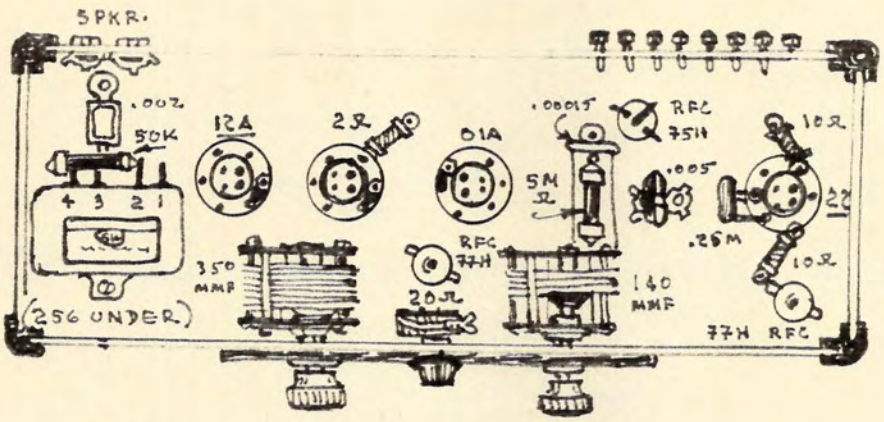


NOTES:

1. 131-A Series 5-Prong Coils.
2. RFC (2) S-M 275/Aero 60.
3. Mar-Co or National Dials.
4. Coil elevated 1" above baseboard.
5. AF transformers shells grounded.
6. A- wire is common.
7. 9 Binding-Posts.

(RW 6-2-28)

S-M R.T.W.F. SW. RCVR., 1926-1929
(Sht. 2)



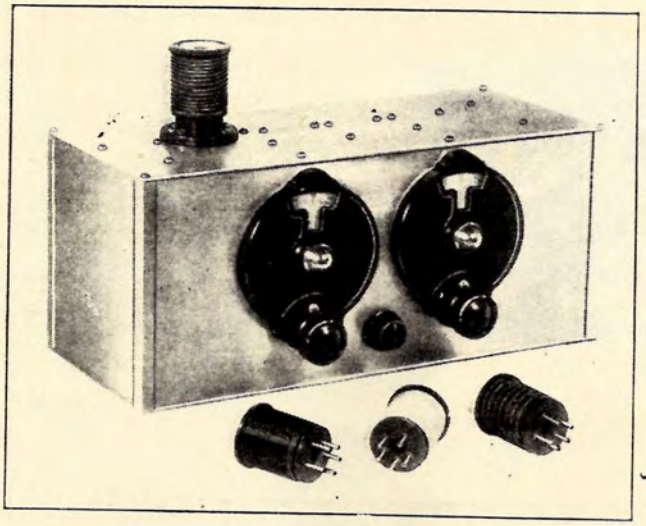
ORIGINAL CHASSIS LAYOUT
Socket for Coil Mounted
in Top Cover.

COIL WINDING DATA:

1. 6.9T, #22 Enamelled Wire;
   5.5T, #34 DCC.
2. 13.5T, #22 Enamelled Wire;
   5.5T, #34 DCC.
3. 25.5T, #22 Enamelled Wire;
   9.5T, #34 DCC.
4. 49.5T, #24 DCC;
   15.5T, #34 DCC.

S-M 131 COIL RANGES:

T = 17.4 - 32 Meters
U = 31 - 58 "
V = 56 - 110 "
W = 105 - 204 "
X = 190 - 360 "
Y = 345 - 650 Meters



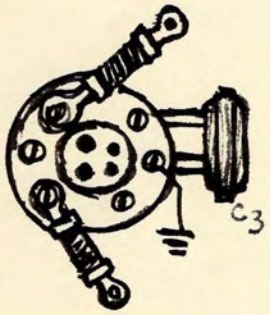
SILVER-MARSHALL SW CIRCUITS, 1926;Sht.4
("R-T-W-4" - 2 Versions)

NOTES ON 1926 VERSION:

S-M coils = 131 series, 5-prong sockets.
Variables = S-M #316A & #317.
Coil socket elevated 1" above chassis.
Panel = 7" x 18" x .125".

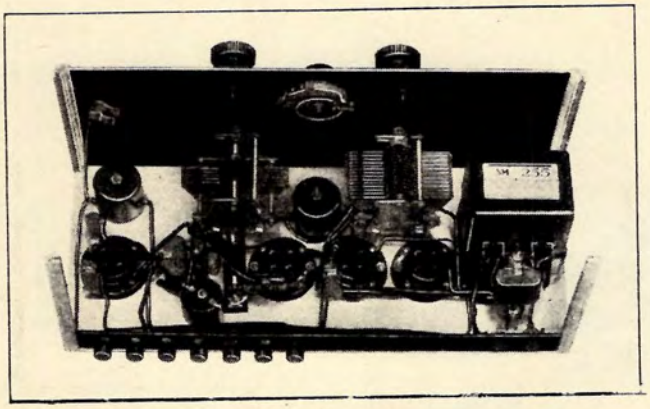
NOTES ON 1929 VERSION:

Aluminum alloy chassis, panel, cabinet.
Front panel = 14" x 6" (x 6" o/a).
(2) National "B" dials.
S-M #131 Series coils.
#18 gauge hook-up wire.
Switch is/was a Yaxley attachment.
Coil socket mounted in top of cabinet.
One AF xfrmr. mounted under chassis.

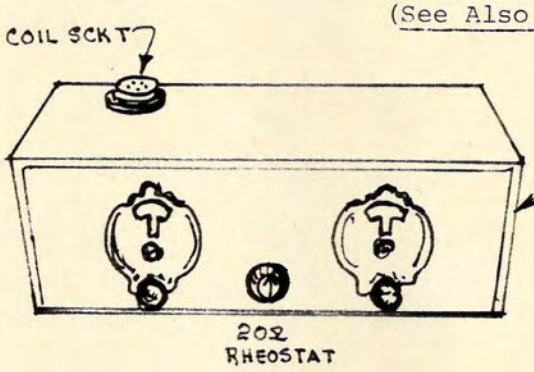


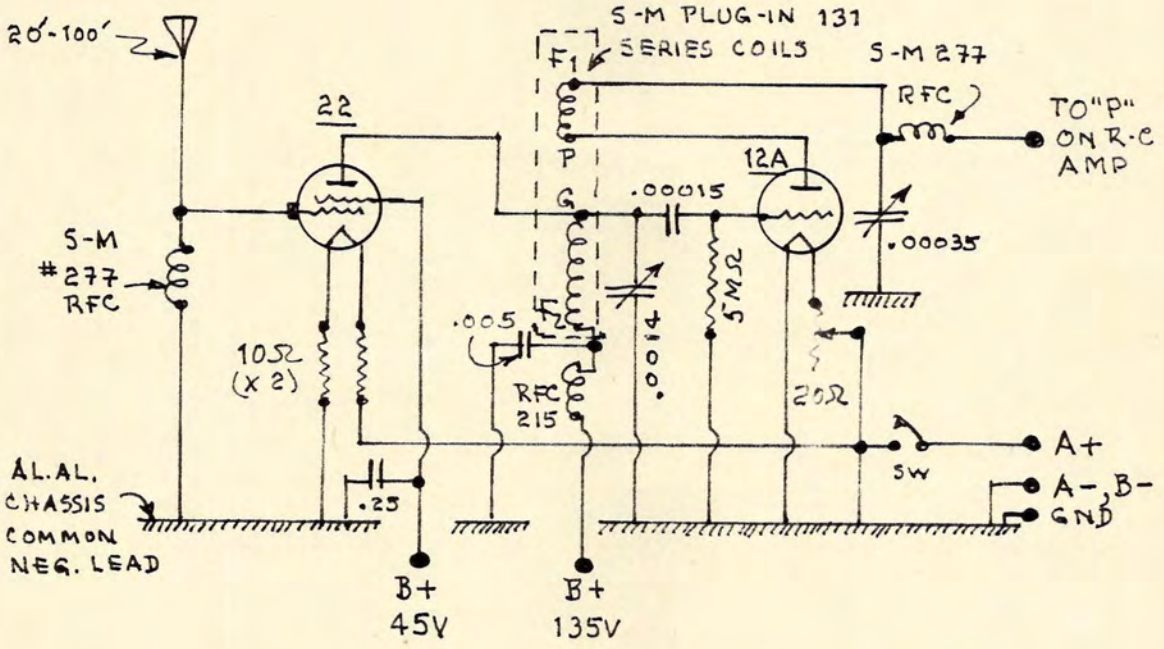
Original 22-tube
Connexions

01A
Original Sckt.
Connexions



S-M 731 SHORT-WAVE ADAPTER, 1928
(See Also S-M "Round-the-World 4")



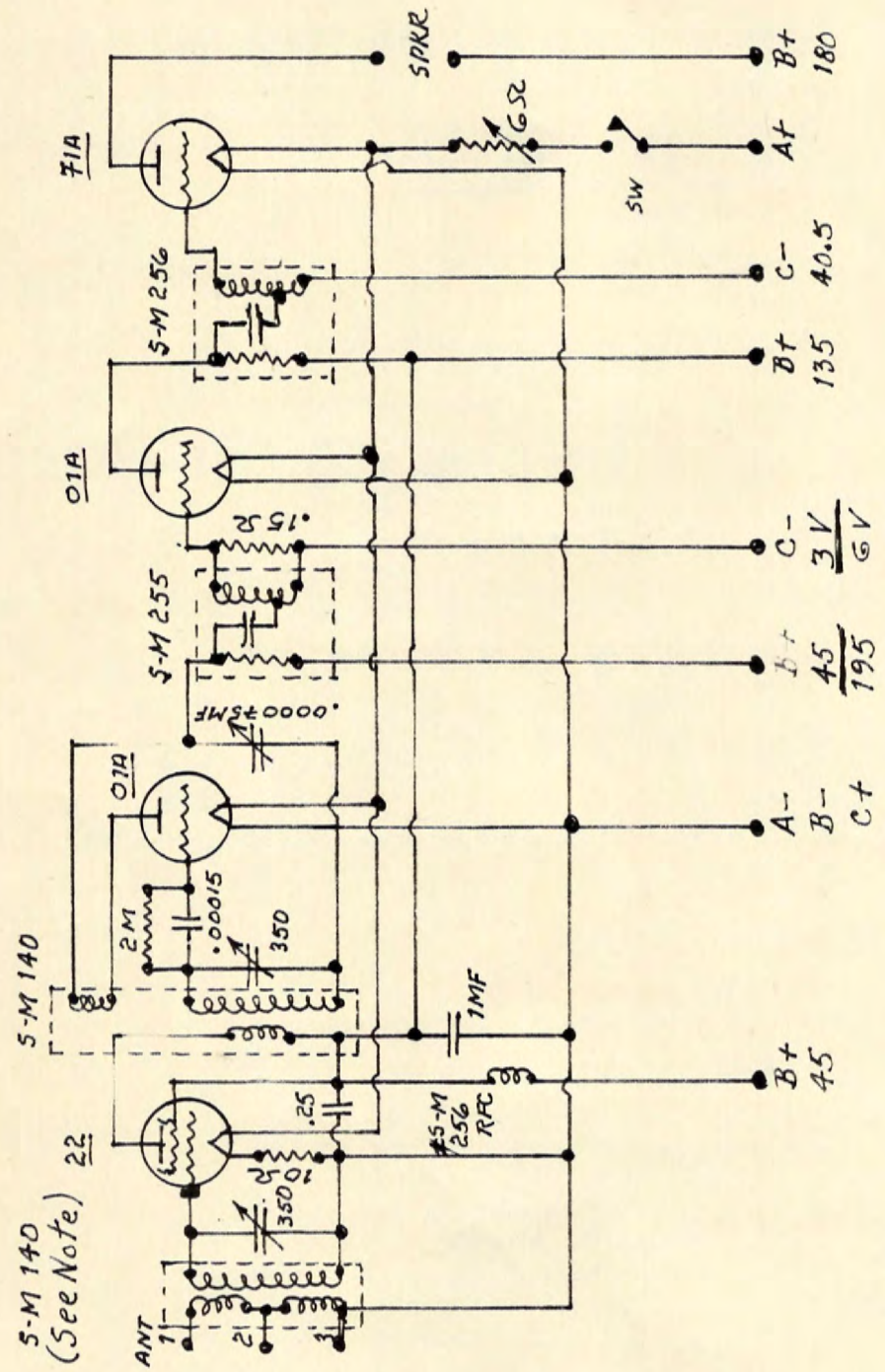


TUNING

1. Set 20-ohm knob with pointer straight up.
2. Turn RH dial until a plunk is heard.
3. Turn LH dial until a squeal is heard.
4. Adjust LH dial for lowest pitch.
5. Adjust RH dial just below the squeal.
6. Signal should now be heard.
7. VOL is controlled by RH dial; the 20-ohm rheostat controls FIL only.
8. May be plugged into DET socket of any BC set.

(CB WIN-28)

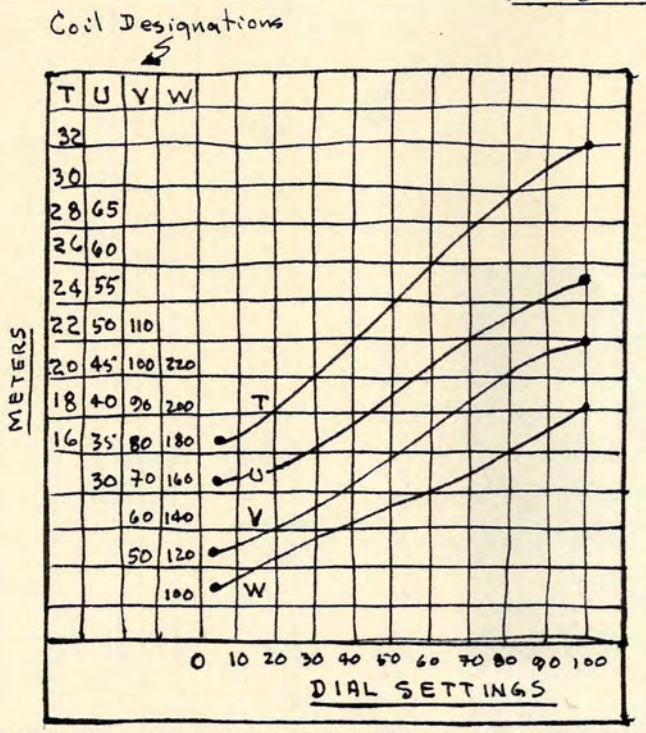
SILVER-MARSHALL 740 "COAST-TO-COAST"
(1928)



Metal cabinet, 7" x 7" x 14".

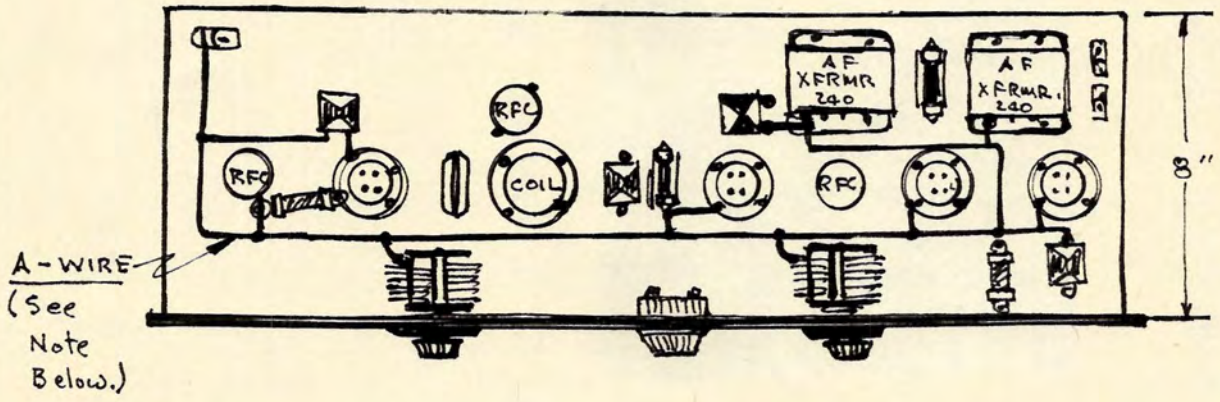
S-M 140 Series coils are/were universal coils, with one having windings connected in series with the ANT.

CALIBRATION OF S-M SW. COILS, 1928
(Using 0-100 Dials, Left to Right)



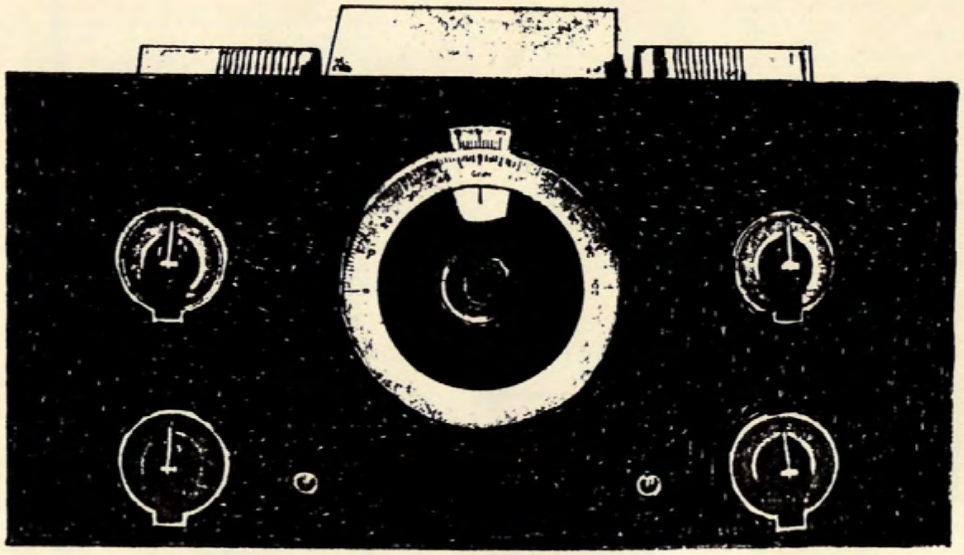
S-M SERIES 131 COILS

S-M R.T.W.4. SW.



Heavy A- wire serves as common ground lead, to which transformer and condenser frames are tied. Heavy leads in detector-grid circuit must be short and direct.

THE JONES - SILVER "SUPER GAINER"



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Price, three tube Jones-Silver Super Gainer, wired, tested and R. C. A. licensed, with one pair of coils for 80 meter amateur and 49 meter broadcast bands, $39.00 list, $23.40 net to amateurs.

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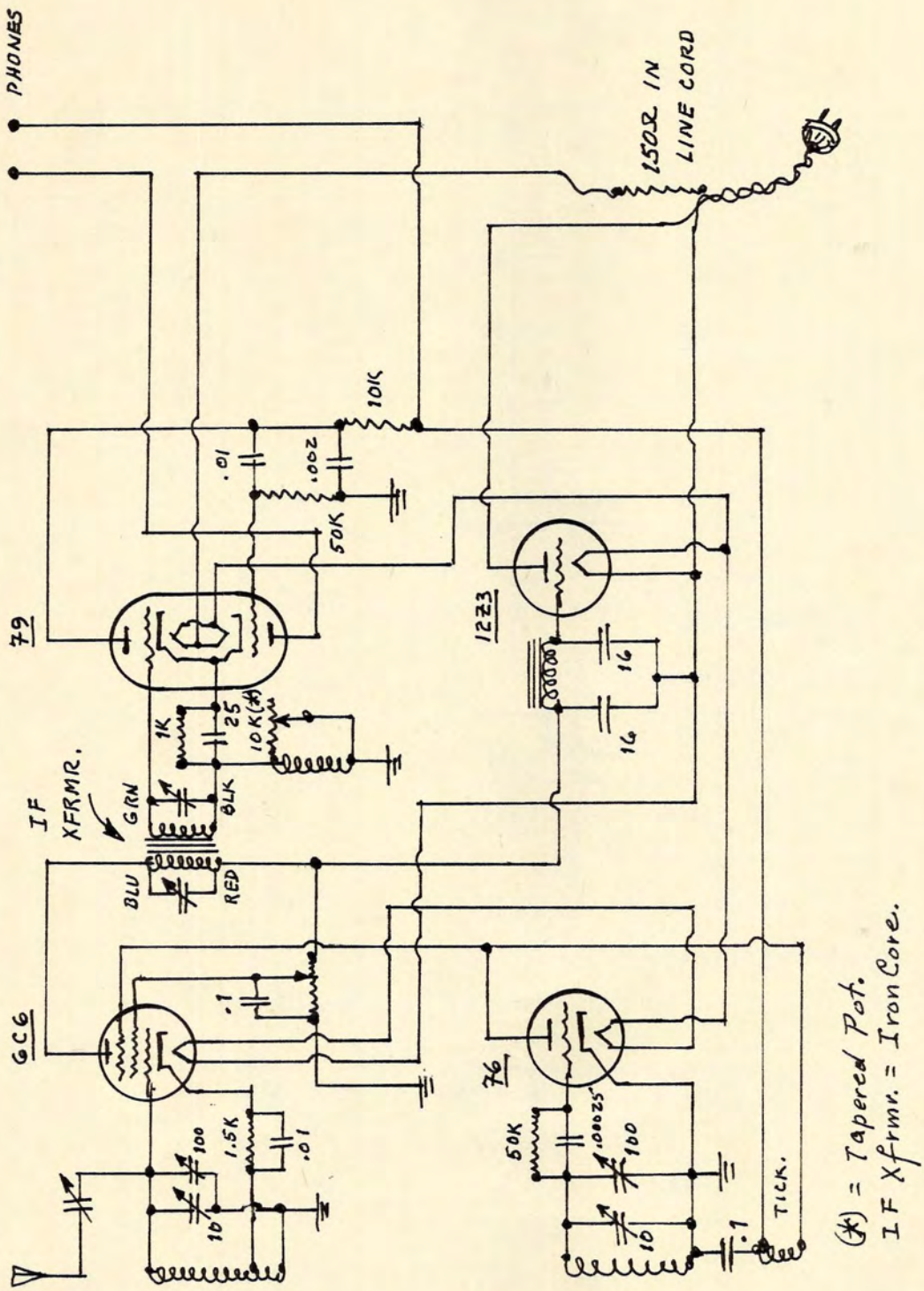
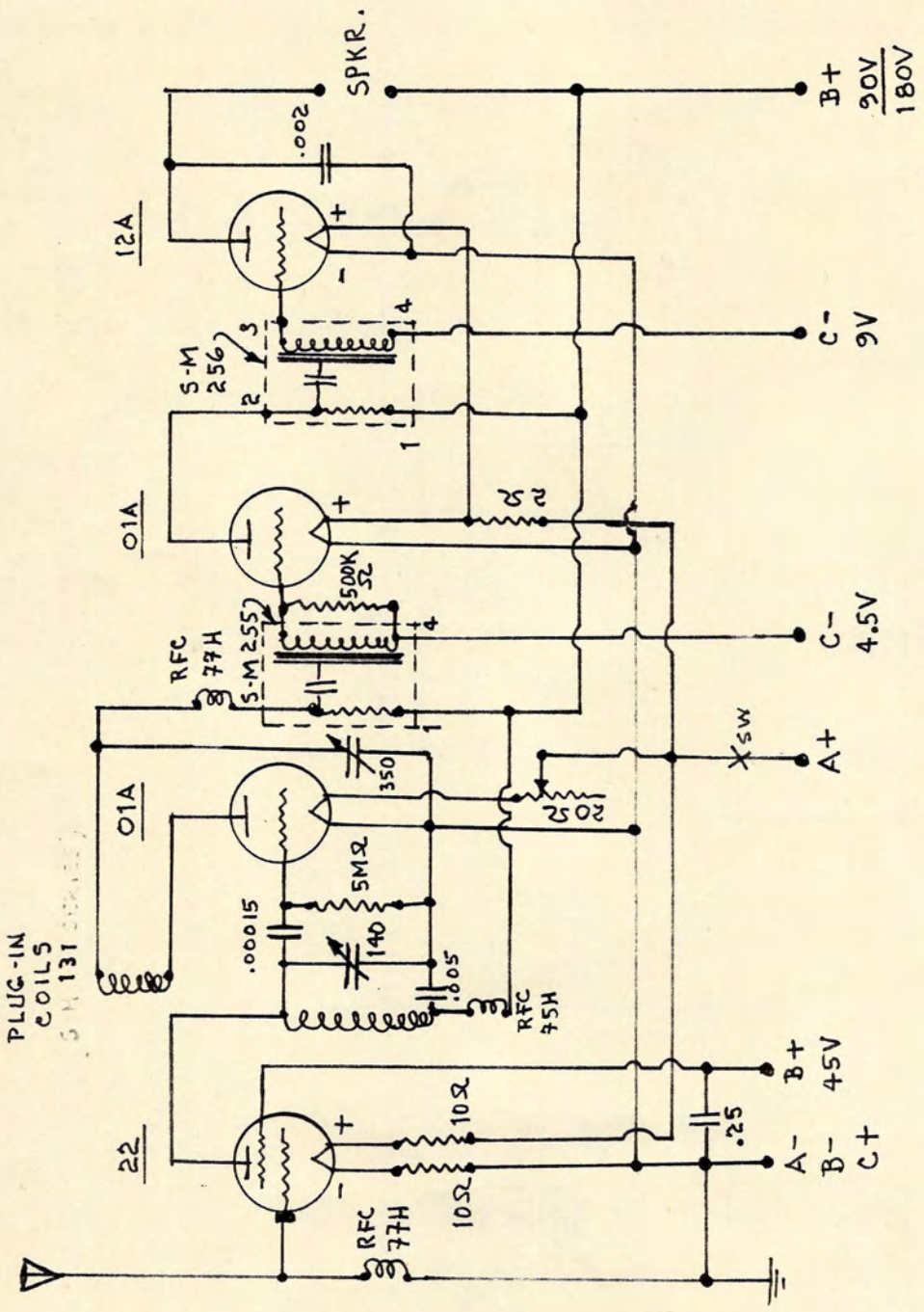
JONES-SILVER "SUPER-GAINER", Sht. 2



S-M "R.T.W.F.", 1929 VERSION



THE CLOUGH CIRCUIT

Kendall Clough was Chief Engineer for Silver-Marshall for several years, and was responsible for designing exceptionally efficient audio-transformers. His last major contribution to the art seems to have been his design for a choke-coupled resonated push-pull transformer. It created a minor controversy among set-builder and suppliers, primarily because its circuitry was unorthodox for the time. The following comments were made by Clough in 1929 as an explanation of his circuit, best explained, perhaps, in terms of a S-M AF transformer known as the S-M 257. We are all familiar with the Clough units, but just how and why they worked is not too well known, hence the following could be of passing interest.

"The push-pull circuit will always give a more-or-less exact reproduction of the wave-form which it receives from the detector for amplification. The only connection by which detector distortion of this form could be corrected would be by amplification of the push-pull system to the detector, itself - which has been done by some experiemnters.

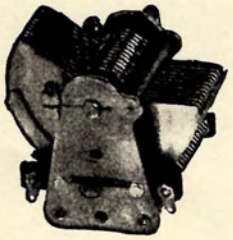
"In phase relationships existing in the push-pull amplifier the windings connected into each side of the circuit are practically unity-coupled, in a good design. All the flux existing in the core by virtue of the primary excitation links both halves of the secondary winding completely.

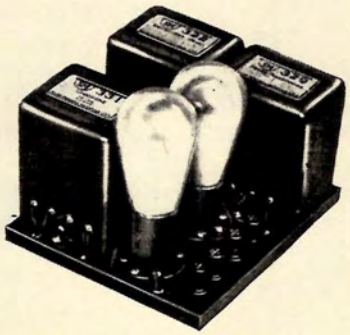
"This is equivalent to saying that the voltages across the two halves of the windings must be equal and, due to the fact that the two windings are in the same direction, the outer ends of the secondary must be exactly in opposite phase with repsect to the mid-tap terminal of the secondary.

"In the resistance-coupled push-pull device no such definite controlling element enters to keep the voltages applied to the two grid circuits of the definitely equal magnitude; whereas, in the transformer-coupled circuit, these two voltages are always definitely related to a single quantity, the magnetic flux of the core.

"If there are any harmonics in the detector output, these are also manifested in the magnetisation winding in the iron, and, thereby, in the voltage applied to the grids of the secondary. If harmonics are generated in the plate circuit of the amplifier tubes, these cancel to a large extent in the output transformer."

SM





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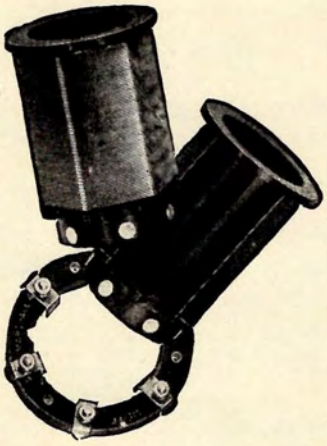

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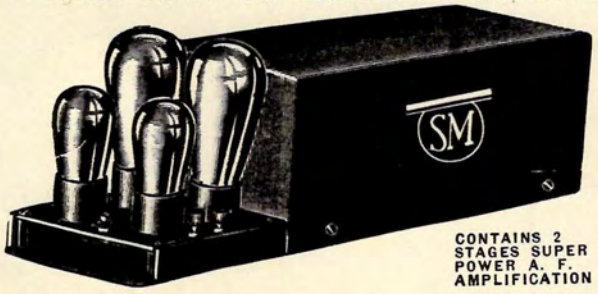
★ SILVER-MARSHALL AUDITORIUM AMPLIFIER

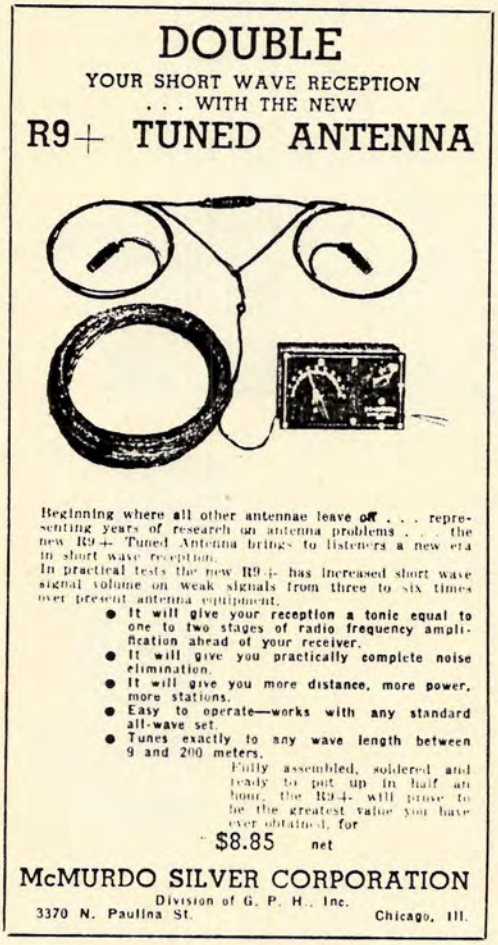


CONTAINS 2 STAGES SUPER POWER A. F. AMPLIFICATION

Silver-Marshall, Inc.

846 W. Jackson Blvd., Chicago

After the collapse of Silver-Marshall, Silver had a go at working for other radio companies, attempted to start-up another company under his own name, jobbed-out his own designs for such things as RFCs, sockets, volume expanders, short-wave aerials, variable condensers, etc. The most remembered of such efforts was his much vaunted "Materpiece" series of chrome-plated chassis, copied from Scott, and the ensuing feud between the two men. Media of the early Thirties are replete with adverts and comments on the McMurdo Silver "Masterpiece" radios, and as they are of no interest to me, such data being readily available to interested parties, I will close this MONOGRAPH with a few passing references to the latter-day activities of Silver.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Using a newly perfected principle, it is completely free of distortion over signal voltage ranges untouched by ordinary expanders...and is as simple to add and use as it is low in price.
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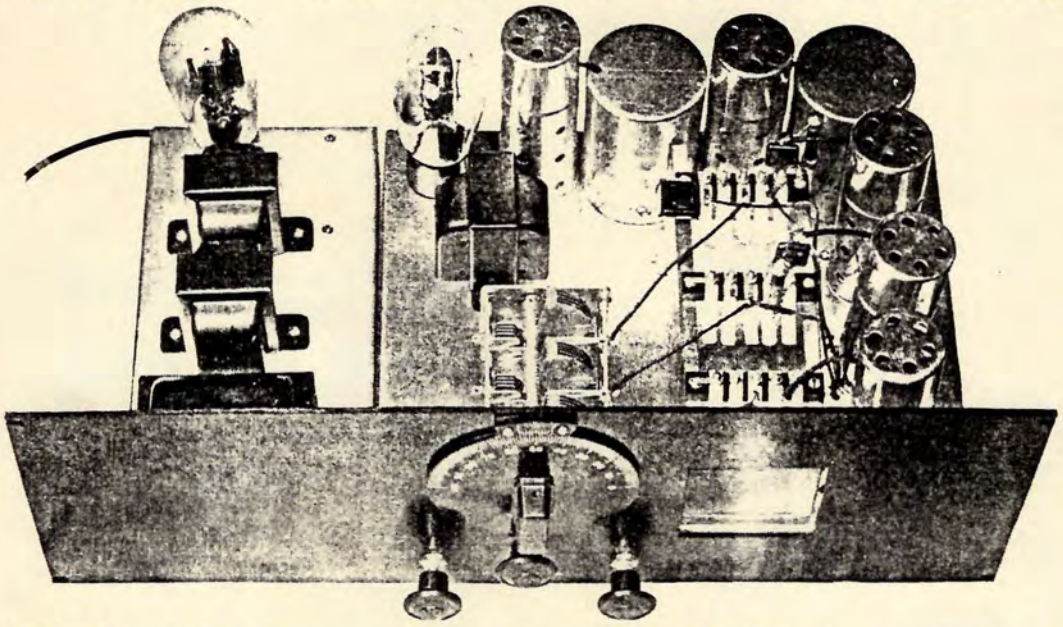

The Ham Super has been designed especially for amateur communication service. The greatest names in amateur radio — men for whom you have the most profound respect — have contributed their advanced engineering knowledge to give this instrument features heretofore unavailable in amateur receivers.

It is a seven-tube AC (or optionally six-tube battery) operated superheterodyne covering the range of 1500 to 15,000 kilocycles in four bands, each with full band spread and c.w. features for the 1700, 3500, 7000 and 14,000 kc. amateur bands. It provides a degree of sensitivity and selectivity exceptional in amateur receivers.

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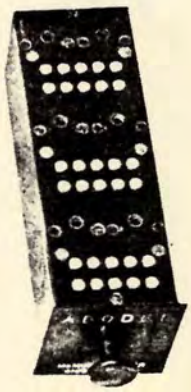
Unquestionably . . . The Ham Super is the most useful receiver ever designed for the amateur. Mail the coupon with 3c stamp for complete specifications and performance facts.



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McMURDO SILVER INC.
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Send me all details of The Ham Super and other amateur transmitting and receiving specialties.

Name .....

Address

McMURDO SILVER died at his home near Hartford, Connecticut, June 18, 1948. Forty-five years old at the time of his death, Silver was known to all radiomen as a veteran designer, constructor and engineer as well as a manufacturer of high-grade radio components and more recently of test equipment. He was head of McMurdo Silver Co., Inc.

Always a pioneer and never an imitator of others, many of his original developments were adopted and became standard over the whole radio field.

McMurdo Silver's first contribution to the radio art was the design of circuits which made the superheterodyne practical. Early superhets used a low intermediate frequency (30 kc). Silver conceived the idea of using a much higher frequency and avoiding the difficulties inherent in what were actually supersonic frequency amplifiers. The Haynes-Griffin superheterodyne, using coils designed by Silver, had an i.f. of 100 kc and was the first of the modern supers.

In the mid-twenties, he combined with a distant relative to produce the famous Silver-Marshall line of high-grade radio receivers and later manufactured a line under his own name. These *Silver Masterpieces* were multiband radios which combined the features of high-class broadcast sets with communications receivers.

More recently he was connected with Guthman Co. and with Fada Radio, of which company he was for a time vice-president. At the time of his death he was manufacturing test instruments for the radio repairman.

Besides radio, McMurdo Silver's hobbies included yachting, polo and old guns. His collection of the latter was extensive, and he was an authority on the history of the Colt revolver. He was a member of the IRE and the Radio Club of America.

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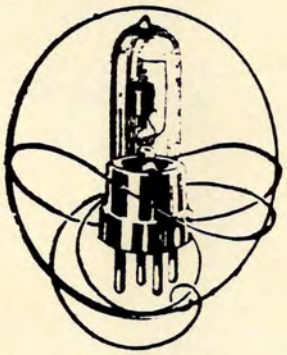

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The following listing is of current MONOGRAPHS by D.H.Moore on specific marques, as we have enough material to make-up a good-size booklet. Each marque is covered from the first circuit or company beginning, with historical and socio-logical references, schematics of all models through 1931; wiring diagrams, wire colour-codes, layout and constructional details, original parts lists, etc. They are available for $16.50,ppd.

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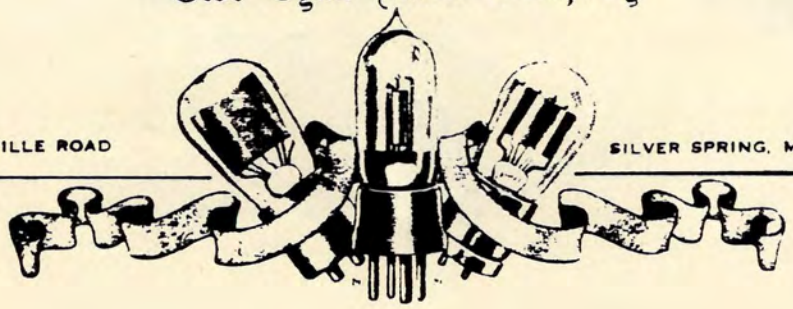

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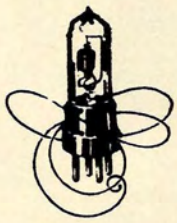

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The author and the publishers take pleasure in announcing that Howard W. Granoff has been selected as the exclusive distributor for United States sales of these unique Sketch-Books and Monographs, and other related writings of the author - D.H.MOORE.

Comments and suggestions from readers of these dedicated works are always welcome, and will be given an immediate hearing, with an eye to improving future editions. While these unique Sketch-Books and Monographs are the labour of one man, the vintage radio hobby remains, as with any legitimate hobby, a shared enthusiasm. These works, then, are a sharing of one man's affection for vintage radio.

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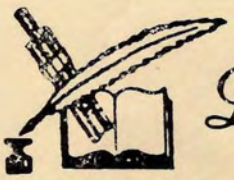

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